United States
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Draft Environmental Impact Statement

East Reservoir

Libby Ranger District, Kootenai National Forest
Lincoln County, Montana

East Reservoir Project
Draft

Environmental Impact Statement
Lincoln County, Montana

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Abstract: The East Reservoir Project considers land management activities, including timber harvest, fuel reduction in areas adjacent to private property, wildlife habitat enhancement, road storage and decommissioning, commercial thinning and precommercial thinning within the East Reservoir Project Area (see maps). Two action alternatives and a no-action alternative are analyzed in detail.

It is important that reviewers provide their comments at such times and in such a way that they are useful to the Agency's preparation of the EIS. Therefore, comments should be provided prior to the close of the comment period and should clearly articulate the reviewer's concerns and contentions. The submission of timely and specific comments can affect a reviewer's ability to participate in subsequent administrative review or judicial review.

Comments received in response to this solicitation, including names and addresses of those who comment, will become part of the public record for this proposed action. Comments submitted anonymously will be accepted and considered; however, anonymous comments will not provide the respondent with standing to participate in subsequent administrative review or judicial review.

Send Comments to:	**Malcolm Edwards, Libby District Ranger** **12557 Hwy 37,** **Libby, MT 59923**

Date Comments Must Be Received: Comments are due 45 days after notice of availability in the Federal Register, which is anticipated to be June 7, 2013. The publication date is the official start of the comment period.

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SUMMARY

INTRODUCTION

The Forest Service has prepared this draft environmental impact statement (DEIS) to disclose potential effects of the proposed action and the alternatives to the proposed action within and surrounding the East Reservoir project area (hereafter called analysis area) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. The project area is located within the Libby Ranger District on Kootenai National Forest in Montana. This DEIS discloses direct, indirect and cumulative environmental impacts and irreversible or irretrievable commitments of resources that would result from implementation of the proposed action and alternatives.

Two action alternatives are analyzed in detail in the DEIS along with the no-action alternative. This general summary briefly describes the analysis area, purpose and need, issues and alternatives analyzed in detail. This information and additional analysis are described in more detail in the remainder of this document and in the project file (located at Canoe Gulch Ranger Station, Libby, Montana). Analysis area maps are found in the map section of this DEIS as well as the project file.

The East Reservoir project area (analysis area) is equivalent to the Cripple Planning Subunit (PSU) which lies east of the Koocanusa Reservoir. The East Reservoir analysis area is approximately 92,407 acres. National Forest System (NFS) lands are publically owned lands that are managed by the Forest Service (FS). They will be referred to as NFS lands. In the project scope, in addition to NFS lands, which consist of 78,546 acres, are 4,032 acres owned by the State of Montana Department of Natural Resource and Conservation (DNRC), 7,672 acres owned by Plum Creek Timber Company (PCTC), 802 acres owned by the US Army Corps of Engineers (COE) and 1,355 acres in private ownership.

PURPOSE AND NEED

As the primary land management agency within the East Reservoir analysis area, and in cooperation with the other land management agencies, the FS identified treatments that would address the following purpose and need:

- Re-establish, restore and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions such as climate change;
- Create a heterogeneous landscape that provides a variety of habitats to sustain populations of terrestrial and aquatic species;
- Provide amenities, jobs and products to the communities;
- Reduce hazardous fuels adjacent to private property and across the landscape while re-introducing fire to the ecosystem;
- Enhance recreation settings and facilities with the goal of providing high quality experiences.

PROPOSED ACTION

Alternative 2 was developed to respond to the purpose and need for the East Reservoir Project. Placement of harvest, stand improvement and fuel treatment locations were designed with consideration to stand treatment needs, fuel treatment need and location, stand resilience to potential climate change, connectivity, fragmentation and other resource needs. Activities included in Alternative 2 are as follows:

- Commercial timber harvest on approximately 8,845 acres;
- Natural fuel reduction/stand improvement through hand slashing, grapple piling, chipping, mastication, or mechanical product removal on 1,378 acres;
- Construction of 9.2 miles of new permanent road to access harvest units, cost-share and/or dispersed campsite access;
- Construction of approximately 4 miles of temporary road to access proposed harvest units;
- Road reconstruction and implementation of best management practices (BMPs) to reduce road impacts to streams on approximately 176 miles of road;
- Long-term road storage for watershed rehabilitation and wildlife security on approximately 16 miles of road, including restoration of an estimated 49 stream crossings;

- Conversion of ~37 miles of motorized trails to non-motorized for increase wildlife security;

ISSUES

Issues were identified through public scoping of the Proposed Action (Alternative 2) and by review from other agencies and FS personnel. The scoping process is used not only to identify important environmental issues, but also to identify and eliminate issues that do not pertain to the Proposed Action, thus narrowing the scope of the environmental documentation process. The following issues were identified to address concerns about, and develop alternatives to, the proposed action.

1. **Regeneration Harvest Units over 40 Acres:** Alternative 2 would remove hiding cover and movement corridors that result in openings greater than 40 acres in MA12 (see Chapter 3 Wildlife Section for more information on hiding cover and openings). The Kootenai National Forest Plan (KNFP) standard for opening sizes in MA 12 is to maintain movement corridors of at least two site distances between openings, and generally not exceed openings over 40 acres (KNFP, p. III-49, Wildlife and Fish standards #7). Alternative 2 would create an opening that does not meet this standard. Unit 362 results in a 192 acre opening on MA12.

   Regional Forester's Approval - Alternative 2 would require Regional Forester approval for exceeding NFMA opening requirements and 36 CFR Part 219.27(d)(2) which states the maximum regeneration harvest treatment for Montana is 40 acres. Past management within the analysis area has interspersed the forest with a series of 20-to-40 acre openings with very distinct (hard) edges between harvested and unharvested areas. This disturbance regime provides suitable habitat for species that are adapted to the edges between forested and non-forested areas. However, species that require larger blocks of habitat are at a disadvantage under such a disturbance regime. The analysis presented in the DEIS found the effects of larger openings would not result in adverse effects for big game, however treatments could result in openings that may not be fully utilized by elk as foraging areas, at least diurnally. The need and rationale for this opening are described in Chapter 3 and the Vegetation Section in the project file. See Table 2.13 for more information.

2. **Motorized versus Non-Motorized Trails:** There is a concern that the motorized trails that lie within the analysis area reduce big game security. Issue indicators include open road density (ORD) expressed in miles/miles^2, miles of new and temporary road construction, cover/forage ratio, and security habitat during fall hunting season expressed as percentage of the total analysis area during and after activity.

3. **Treatment in Old Growth (OG) Forest:** The original proposed action scoped in 2010 was developed based on preliminary assessments of stand conditions. Further evaluation of OG stands proposed for commercial product removal identified that harvesting in these stands would not enhance nor preserve the OG qualities of the stands. As a result, all proposed harvest in OG stands has been dropped from the proposed action.

ALTERNATIVES CONSIDERED IN DETAIL

ALTERNATIVE 1 – No Action

This alternative represents the existing condition in the East Reservoir analysis area. Under this alternative, none of the proposed Forest Service activities, such as timber harvest, precommercial thinning and fuel reduction would occur. Other on-going activities, such as weed treatment, recreation, the DNRC harvest, PCTC harvest and firewood gathering would continue. Activities identified in Chapter 3 as current and reasonably foreseeable actions would occur.

ALTERNATIVE 2 – Action Alternative 2 is the proposed action scoped on December 21, 2010 and was greatly influenced by Stakeholder collaboration (e.g. lynx direction, stand treatments, fuels treatments, over 40 acre units, product removal). It actively manages (see specifics in Ch.2 , Range of Alternatives) the landscape to help trend the existing condition to the desired future condition as described later in this chapter. Briefly, it proposes to treat approximately 8,845 acres with a variety of prescriptions (Table 2.0) including regeneration to improve species resiliency and retention. Harvest methods include tractor and skyline. Alternative 2 precommercially thins approximately 5,775 acres including 212 acres of white pine

daylighting; commercial thinning comprises approximately 2,256 acres. It includes 1,378 acres of fuels reduction units and prescribe burns approximately 10,049 acre for fuels reductions and wildlife habitat improvement. Approximately 9 miles of new road construction would occur along with 4.3 miles of temporary road. Sixteen miles of road would be placed into intermittent storage and 37 miles of motorized trails would be closed to increase secure habitat for wildlife during the hunting season. Additional access changes are listed in the tables for Alternative 2 in Chapter 2 of this DEIS.

ALTERNATIVE 3

Alternative 3 was designed to meet all KNFP standards and guidelines, and to address many of the issues raised internally(regeneration units over 40 acres, treatments in old growth, availability of motorized trails), by public stakeholders in scoping comments and as a result of further reconnaissance of the analysis area regarding the Proposed Action (Alternative 2). This alternative reduces the amount of treatment in the analysis area. Briefly, it proposes to treat approximately 7,782 acres with a variety of prescriptions (Table 2.15) including regeneration to improve species resiliency and retention. Harvest methods include tractor and skyline. Alternative 3 precommercially thins approximately 5,563 acres (no white pine daylighting). It includes 1,309 acres of fuels reduction and prescribe burns approximately 10,049 acre for fuels reductions and wildlife habitat improvement. Approximately 8 miles of new road construction would occur along with 4.1 miles of temporary road. Approximately 18 miles of road would be placed into intermittent storage and 27 miles of motorized trails would be closed motorized travel to increase secure habitat for wildlife. Additional access changes are listed in the tables for Alternative 3 (Chapter 2).

COMPARISON OF ALTERNATIVES

This section provides a comparison of the alternatives in terms of:

- How the alternatives compare to one another;
- How the alternatives meet the Purpose and Need for the proposal;
- How the alternatives respond to the key issues;
- The potential environmental consequences associated with the implementation of the alternatives.

Table S.1 - Comparison of Purpose and Need Objectives by Alternative

RE-ESTABLISH, RESTORE and RETAIN LANDSCAPES that are MORE RESISTANT and RESILIENT to DISTURBANCE (INSECT and DISEASE INFESTATIONS, FIRE) and UNCERTAIN ENVIRONMENTAL CONDITIONS such as CLIMATE CHANGE	ALT 1	ALT 2	ALT 3
Commercial Timber Harvest (acres)	0	8,845	7,782
Precommercial Thinning (acres)	0	5,563	5,563
White Pine Precommercial Thinning (20% of stand acres)	0	212	0
CREATE a HETEROGENEOUS LANDSCAPE that PROVIDES a VARIETY of HABITATS to SUSTAIN POPULATIONS of TERRESTRIAL and AQUATIC SPECIES			
Motorized Trails Changed to Non-Motorized (miles)	0	36.56	26.89
Fuels and Wildlife Treatment (acres)	0	10,049	10,049
PROVIDE AMENITIES, JOBS AND PRODUCTS TO THE COMMUNITIES			
Timber Harvest Volume, Estimated, CCF	0	78,761	7,782
Total Employment (persons)	0	629	560
REDUCE HAZARDOUS FUELS ADJACENT TO PRIVATE PROPERTY AND ACROSS THE LANDSCAPE WHILE RE-INTRODUCING FIRE TO THE ECOSYSTEM			
Natural Fuel Reduction/Stand IMP through Hand Slashing, Grapple Piling, Chipping, Mastication or Mechanical Product Removal (acres)	0	1,378	1,309
Fuels and Wildlife Treatment (acres)	0	10,049	10,049
ENHANCE RECREATION SETTINGS AND FACILITIES WITH THE GOAL OF PROVIDING HIGH QUALITY EXPERIENCES			
Construction and Improvement of Recreation Access Roads (miles)	0	6.28	6.28
Road Access Changed to Yearlong Access (miles)	0	1.79	1.79
Native Rock Ring Fire Pits, Vault Toilets and Signage Proposed	No	Yes	Yes

Table S.2 - Comparison of Issue Indicators by Alternative

ISSUE #1 – REGENERATION HARVESTS OVER 40 ACRES	ALT 1	ALT 2	ALT 3
Number of Units Over 40 acres in MA12	0	1	0
Number of Units Over 40 acres in MA 15, 16	0	12	0
ISSUE #2 - IMPACT to OLD GROWTH FOREST STANDS			
Vertical Structure Removed in Designated OG/ROG (acres)	25	137	0
Vertical Structure Removed in Undesignated OG (acres)	N/A	43	0
Road Length Existing/Built Adjacent/Through Designated OG/ROG (ft.)	158,400	+666	+666
Number of Existing or Proposed Regeneration Units Adjacent to OG	136	+28	+23
Edge Influence in OG (acres)	1,744	+250	+241
Interior Habitat Remaining in Old Growth (acres)	7,518	7,268	7,277
Treated to Maintain OG or Trend Stand Toward OG (Burning) (acres)	N/A	1,326	0
Percent of Designated Old Growth in the PSU	11.2	11.2	11.2
ISSUE #3 - MOTORIZED vs. NON-MOTORIZED TRAILS			
Motorized Trails Changed to Non-Motorized (miles)	0	36.56	26.89
Security Cover (Standard 30%)	28.1	35	33.4

DECISIONS TO BE MADE

1. Whether to implement vegetation management activities (silvicultural prescriptions, logging methods, slash treatment, reforestation, fuel reduction, precommercial thinning, and management measures and design features to protect resources and the site-specific location of these activities and practices would occur.
2. Whether to construct temporary roads to access proposed timber harvest units.
3. Whether to implement road storage and decommission activities to improve watershed condition and, if so, where.
4. Whether to construct new permanent roads to harvest units and recreation sites.
5. Whether to make improvements to recreation sites.
6. Whether to change motorized trails to non-motorized trails.
7. Whether to cost-share roads with DNRC and/or PCTC.
8. What, if any, specific project monitoring requirements are needed to assure management measures and design features are implemented and effective, or to evaluate success of project objectives.
9. Whether to request Regional Forester approval for regeneration units over 40 acres.

East Reservoir Project DEIS

Chapter 1

Purpose and Need for Action

INTRODUCTION

The Forest Service (FS) has prepared this Draft Environmental Impact Statement (DEIS) in accordance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations.

This chapter identifies the implementation area, the proposed action, the purpose and need for action, the relationship to the Kootenai National Forest Plan (KNFP), the scope of the analysis, and the decisions to be made. All referenced maps are located in the map section of this document.

The proposals in this project were developed from a broad scale assessment of the East Reservoir analysis area (East Reservoir Landscape Assessment, September 2010). The district prioritized the recommendations that were made in that assessment to formulate this project. A copy of the East Reservoir Landscape Assessment is located in the project file.

The East Reservoir Landscape Assessment area is equivalent to the Cripple Planning Subunit (PSU) area which lies within the Koocanusa Physiographic Area. All past, current and proposed future activities (5 – 10 years) were considered in the effects analyses in Chapter 3.

PROJECT AREA DESCRIPTION

The East Reservoir project area (from now on referred to as analysis area) lies approximately 15 miles east of Libby, Montana in Lincoln County, along the east side of Lake Koocanusa Reservoir. The analysis area is approximately 92,407 acres. The National Forest System (NFS) manages 78,546 acres, Montana State Department of Natural Resources and Conservation (DNRC) manages 4,032 acres, 1,322 acres are in private ownership, Plum Creek Timber Company (PCTC) owns 7,672 acres and the Corp of Engineers (COE) manages 802 acres.

The legal description of the analysis area includes all or portions of T30N, R28W, Sections 2 to 11, 13 to 30 and 32 to 36; T30N, R29W, Sections 1 to 4, 9 to 16 and 24; T31N, R327W, Sections 3 to 10, 15 to 18, 20 to 22, 28 and 29; T31N, R28W, Sections 1 thru 36; T31N, R29W, Sections 1, 2, 10 to 15, 22, 23, 26 to 36; T32N, R27W, Sections 7 to 9, 14 to 23 and 26 to 33; T32N, R28W, Sections 2 to 5 and 8 to 36; and T32N, R29W, Sections 24 to 26, 35 and 36. The East Reservoir analysis area makes up the analysis boundary for most resources. The analysis area for the wildlife resource varies with species and is described in the Wildlife Section in Chapter 3 of this document

The East Reservoir analysis area consists of five major drainages: Fivemile Creek, Warland Creek, Cripple Horse Creek, Canyon Creek and Dunn Creek. These drainages flow from east to west. These drainages are deeply incised by their streams and the ridgelines have fairly gentle slopes. Side slopes between these two features are generally steep.

The Reservoir East analysis area is a diverse landscape that ranges in elevation from a low of about 2,200 feet along the Kootenai River to 6,051 feet at the top of Davis Mountain. The south and west aspects of the analysis area have numerous small natural openings in a ponderosa pine and Douglas-fir canopy. The north and east aspects have a nearly continuous canopy of Douglas-fir, larch and lodgepole pine. This tree canopy is broken sharply by drainages.

The East Reservoir analysis area provides a variety of recreation opportunities. Recreation activities are varied and occur year-round. Activities include snowmobiling, hunting, fishing, off-highway vehicle (OHV) use, hiking, scenic viewing, wildlife viewing, camping and gathering forest products such as berries and firewood. There are several major rock forms visible in this analysis area, especially along Lake Koocanusa Reservoir.

DESIRED CONDITION

The Kootenai National Forest Plan (KNFP) includes a statement of the Desired Condition (DC) for the Forest, Volume 1- Chapter II. The KNFP discussion of the DC is broad in nature and addresses conditions for multiple resources. More detailed, site oriented DCs are disclosed under Management Area (MA) descriptions, Volume 1- Chapter III and expressed by Vegetation Response Units (VRUs). Vegetation Response Units are one of the currently accepted systems of expressing DCs in ecological terms. These DCs are based or derived from historic conditions modified to consider current resource capabilities such as watershed, wildlife and scenic resources. The management proposals of this project assist in moving existing resource conditions of the analysis area or Cripple PSU, toward the desired future conditions introduced in the 1987 KNFP (KNFP II-17) and supported by VRU descriptions.

Historic conditions serve as a reference or target for the desired future condition while taking into consideration current resource capabilities such as watershed, wildlife and scenic resources as well as the anticipated growth of human demands. The challenge for forest managers is to provide for these demands while managing for sustainability.

Briefly, the desired future condition for the East Reservoir project and Cripple PSU is an ecologically functional, forested landscape providing clean water, wildlife habitat, forest products, amenities and recreation settings. The Interdisciplinary Team's (IDTs) strategy to move the existing condition of the East Reservoir analysis area or Cripple PSU toward the DC includes a variety of activities such as: managing insect and disease incidence; reducing shade tolerant tree species; managing high forest stand density; wildlife habitat management; fuels reduction in the wildland urban interface (WUI); improving recreation settings, and facilities, especially adjacent to the Koocanusa Reservoir; maintaining a suitable transportation network, and providing community amenities.

Specifically, the DCs for the East Reservoir analysis area include:

1. A forested landscape pattern with a broad spectrum of native vegetation species, composition and successional stages where insects and disease are present at endemic levels.
2. Diverse ecosystems that provide a full range of habitats necessary for self-sustaining populations of native wildlife species, both terrestrial and aquatic. These ecosystems are more resilient to insects and disease, climate change and wildfires.
3. A sustainable supply of forest products is available to the local economy while remaining compatible with other forest resources and MA direction.
4. The spread of noxious weeds is minimized and established weed populations are contained or reduced.
5. Prescribed fire is used to simulate natural ecological processes, prevent excessive natural and activity fuel levels, manage habitat for wildlife, reduce suppression costs, and maintain ecosystems.
6. Vigorous, diversified streamside vegetation contributes to stable soil conditions, good bank stability, stable channel conditions and stable water temperatures. Water quality is high and sedimentation associated with human activities is within acceptable limits and reflective of healthy riparian habitats.
7. Recreation settings that yield high quality experiences are enhanced by management activities. Facilities, largely found along Koocanusa Reservoir, are maintained to health and safety standards and accommodate an expanding visiting public. Pleasing views are readily available along State and Federal scenic byway, Highway 37.
8. A suitable balance of open and closed roads is present for motorized and non-motorized access, is compatible with wildlife and fish habitat needs, and results in lower road maintenance costs.

The IDT identified specific actions that could be taken in those situations where existing conditions either are not meeting desired future conditions or are not moving toward desired future conditions. Collectively, these items form the Purpose and Need for Action, which would help move the area toward the conditions described previously. The following summarizes the ecological and social factors that have contributed to the changed conditions and form the basis for the Purpose and Need for Action.

PURPOSE and NEED for ACTION

As the primary land management agency within the East Reservoir analysis area, and in cooperation with the other land management agencies (COE), the FS identified treatments in order to meet the following objectives or purpose:

- Re-establish, restore and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions such as climate change;
- Create a heterogeneous landscape that provides a variety of habitats to sustain populations of terrestrial and aquatic species;
- Provide amenities, jobs and products to the communities;
- Reduce hazardous fuels adjacent to private property and across the landscape while re-introducing fire to the ecosystem;
- Enhance recreation settings and facilities with the goal of providing high quality experiences.

By implementing the East Reservoir Project, the Libby Ranger District can address several resources that have deviated from reference conditions, maintain those that are necessary for species diversity and viability, and improve those where public demand is expected to increase, such as recreation settings, job opportunities and forest access. Specifically, the following discloses how current conditions are not meeting desired future conditions and why they need to be addressed:

Re-establish, restore and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions such as climate change.

Vegetation management strategies to create resistance and resiliency to natural disturbances such as fire, insect and disease and climatic variations include:

- Control of invasive species (e.g. weeds on winter range, Mountain Pine Beetle);
- Thinning conifer stands to decrease competition and stress,
- Forest type conversions to shade intolerant, and insect and disease resistant species such as western larch, western white pine and ponderosa pine;
- Developing mixed tree species plantations with shade intolerant species;
- Increasing forest age and composition diversity across the landscape through variable stand compositions, ages and structure;
- Maintaining or developing patch and gap sizes that are ecologically sustainable;
- Reducing hazardous fuels;
- Creating fuel breaks;
- Increasing stream buffers.

Alternative 2 best meets this purpose and need. Please see descriptions of alternatives for more information.

The KNFP (p. II-1) includes a goal to "*Maintain diverse age classes of vegetation for viable populations of all existing, native vertebrate wildlife species, including old growth timber in sufficient quality and quantity to maintain viable populations of old growth dependent species and to maintain habitat diversity representative of existing conditions*". Alterations of the lower elevation, warm and dry forest types have occurred over the past 100 years due to historic logging and fire suppression. Historic logging focused on riparian areas and removing the shade intolerant species (western larch and ponderosa pine) and fire suppression has disrupted historic fire cycles. Absence of non-lethal, low-severity fires and mixed-severity fires across these drier sites have likely contributed to an increase in insect and disease incidence, increased stand density, and favored more shade tolerant and less disease resistant species such as Douglas-fir and grand fir. Disruption of historic fire cycles combined with the predicted climate change may also contribute to accelerated insect and disease infestations and increased fire behavior. Climate change will likely result in stress to at least a portion of the current forest and stressed trees are more likely to succumb to insect and disease attacks.

There is a need to implement vegetation treatments that trend the forest landscape towards the historic reference conditions for the warm and dry forest sites. Treatments including regeneration and improvement harvests, pre-commercial thinning and commercial thinning, and tree planting are needed to trend species composition and stand densities towards the historic reference conditions that are more resilient in health and resistant to the potential impacts of insects and disease, specifically of mountain pine beetle and Douglas-fir beetle that currently exist at endemic levels.

Likewise, there is also a need to trend the higher elevation, cool and moist forest types towards the historical reference conditions to improve overall forest resiliency to climate change and resistance to potential disturbance.. There is a need to restore species compositions, stocking levels, and successional stages in these forest types back towards the historic conditions; particularly within stands of stagnated and stressed lodgepole pine. Regeneration and improvement harvests, thinning, and planting are needed to trend towards the historic conditions.

Create a heterogeneous landscape that provides a variety of habitats to sustain populations of terrestrial and aquatic species.

Management strategies to create a heterogeneous landscape that provides a variety of habitats to sustain populations of terrestrial and aquatic species include:

- Establishing or maintaining ecologically sensitive areas (meadows, wallows, fens, old growth, etc.);
- Establishing or maintaining forest cover and landscape connectivity (via old growth and mature lynx habitat);
- Increasing forest age and composition diversity across the landscape through variable stand composition, ages and structure; responding to the need of the appropriate amount and juxtaposition of foraging, denning (rearing) and cover (secure) habitats for a wide variety of wildlife species resident in the Cripple PSU and Kootenai National Forest (KNF);
- Responding to Canada lynx habitat needs by treating sparsely-used mature forest stands with little or no evergreen understory to increase snowshoe hare habitat;
- Responding to bighorn sheep needs by treating noxious weeds on winter range and thinning encroaching conifers on escape habitat via precr4ibed burning;
- Maintaining ungulate forage areas with vegetation treatments (timber harvest, prescribed burning) benefiting herd health and vigor, which in turn benefits predators such as mountain lions and wolves;
- Increasing general wildlife security in the form of increasing size of, or condition of, non-motorized cover areas, which benefits both grizzly and black bears, elk, moose and furbearers including fisher, wolverine, bobcat as well as many other species.

Alternative 2 best meets this purpose and need. Please see descriptions of alternatives for more information.

With past harvest activities, forage patches have become more uniform in size (30-40 acres) and shape. While the Dry Fork Fire of 1988 burned 3,400 acres within the analysis area most existing forage areas fall within the range described above. The existing condition, for the most part, is not representative of reference conditions. Past timber harvests have noticeably influenced the juxtaposition of wildlife cover and forage. Harvests have unnaturally affected "edge" habitats as well as interior habitats, the greatest impacts likely being on those species associated with large expanses of interior habitats. This condition is especially true in the cool and moist habitats (VRUs 5, 7, 9) where there was much lodgepole pine salvaging as a result of the MPB infestation of the late 1970s to early 80s.

There are 12,975 acres of ungulate winter range, MAs 10 and 11, which are being overtaken by less desirable tree species and noxious weeds, suppressing native species like blue-bunch wheatgrass and bitterbrush, important ungulate staples. Understory mechanical thinning and prescribed burning can be used to improve conditions. Likewise, herbicide and biological treatments can remove and slow down the progression of noxious weeds known to the area. Forest Plan goal (p. II-2) emphasizes the *"attempt to stop*

the spread and suppress existing levels of noxious weeds".

Provide amenities, jobs and products to the communities.

Management strategies to provide amenities, jobs and products to the communities include:

- Vegetation treatments including timber harvest and associated fuels treatments (8,845to 7,782) and precommercial thinning (5,775 to 5,563). These treatments will help maintain ecosystem function and vegetative health as well as reduce fuels and provide timber products;
- Fuel treatments (1,378 to 1,309 acres) are proposed to reduce hazardous fuels by utilizing a combination of prescribed fire and/or mechanical treatments. Almost all of these units are immediately adjacent to private property and are intended to reduce hazardous fuels. Prescribed burning could include underburning, jackpot burning or pile burning. Mechanical treatment may include a combination of hand slashing, grapple piling, chipping, mastication or mechanical product removal;
- New permanent road construction (9.25 to 8.06 miles) to access proposed harvest units;
- Temporary road construction (4.26 to 4.05 miles) to access proposed harvest units;
- Road reconstruction and best management practice (BMP) on haul routes (176 to 168 miles) to provide access while reducing the impact of the road system on water quality;
- Trail access changes from motorized to non-motorized (37 to 27 miles) to improve big game security habitat. Maintains 10 miles open for motorized recreation to be used in concert with open roads providing a motorized loop for recreationists;
- Road storage activities (16 to 18 miles) as identified in the East Reservoir Travel Analysis Process (TAP) within the Cripple PSU. These treatments will help improve water quality in the project area by removing chronic sources of sediment. A copy of the East reservoir TAP is included in the project file;
- Undetermined roads (13.5miles) are proposed to be added to the National Forest System (NFS) of roads. Undetermined roads are roads that exist on the ground but are not officially part of the road system that includes maintenance;
- Cost-share of roads within the project area include the Forest Service investing in roads on State land (5.06 miles) and the DNRC investing in roads (24.66 miles) on NFS lands;
- Improvements of dispersed campsites and reconstruction of access roads to dispersed campsites along the Kootenai Reservoir.

Both action alternatives contain attributes that best meet different aspects of this purpose and need. Please see descriptions of alternatives for more information.

There are also social factors that affect the resources and management of the Project Area. One of the purposes identified by Congress for the establishment of National Forest System (NFS) lands is to "*furnish a continuous supply of timber for the use and necessities of the citizens of the United States"* (Organic Act 16 USC 475). One of the goals of the Kootenai National Forest Land and Resource Management Plan, pg. II-1, is to "*Provide a sustained yield of timber volume responsive to national and regional needs, scheduled to encourage a stable base of economic growth in the dependent geographical area*." Other social needs include natural resource related jobs, forest products for home heating, building and decorating, and special uses (e.g. land access, utility right-of-ways, water etc.) but also for places that provide solitude, scenery, and recreation.

As residential and visiting populations grow so do anticipated demands for these types of resources–a stimulus for continual resource management. Predicting the demand for these resources is extremely challenging, therefore management strategies require frequent evaluation and need to remain adaptable in order to adequately address this desired condition of the KNFP.

Timber harvest would not only meet wildlife habitat, fuels reduction and landscape resiliency goals but also provide timber products. Many of the regeneration harvest in MA 12 and MA 15 are in stands that have reached the culmination of mean annual increment and are not adding growth and not fully occupying the

sites. Additionally, Timber Objectives (page 11-4) include "Insects and disease will be controlled to historic endemic levels, and lodgepole pine will be harvested prior to future outbreaks of mountain pine beetle.

Reduce hazardous fuels adjacent to private property and across the landscape while re-introducing fire to the ecosystem.

Management strategies to reduce hazardous fuels adjacent to private property and across the landscape while re-introducing fire to the ecosystem include:

- Reducing fuel loading throughout the analysis area;
- Reducing basal area on overstocked stands;
- Restoring fire tolerant species such as ponderosa pine and western larch.

Alternative 2 best meets this purpose and need. Please see descriptions of alternatives for more information.

Aggressive wildfire suppression and natural stand succession has resulted in uncharacteristically high fuel loads around private properties (wildland urban interface[1]) and the general forest. This build-up of fuels can result in high severity, stand replacing fires where they would typically not occur and can result in damage or loss of personal property and human life. There are approximately 8,500 acres of WUI in the Project Area. 2,800 acres need hazardous fuel reduction treatments because the expected fire behavior (e.g. crown fire or flame lengths greater than 4 feet) would pose a risk to public and firefighter safety;

Enhance recreation settings and facilities with the goal of providing high quality experiences.

Management strategies to enhance recreation settings and facilities with the goal of providing high quality experiences include:

- Improving camping site access with new road construction and reconstruction of access roads;
- Installing native rock fire ring pits in suitable areas;
- Installing vault toilets to improve sanitation and promote public health;
- Improving signage for area attractions and amenities (e.g. Koocanusa Marina, Yarnell Campground);
- Determining and maintaining 9.2 miles of motorized trails in concert with open roads within the analysis area to create a recreation loop.
- Determining and maintaining 2.75 miles of walking/bicycling/horse riding trail in concert with cultural interests within the analysis area to create a recreation loop.

Alternative 3 best meets this purpose and need. Please see descriptions of alternatives for more information.

District specialists have noted the increased use of adjacent Lake Koocanusa in recent years. User created dispersed camp sites, ATV trails, and fire rings are some of the obvious signs in the adjacent land area mostly made up of MA 6 (Developed Recreation). Likewise, the existing Koocanusa Marina Special Use permitted area is receiving increased use and is expanding to accommodate this need. These actions need to include management of motorized recreational vehicles and open routes (roads and trails). Additionally, Lake Koocanusa is known for its scenic attributes as seen from Montana State Highway 37 (Montana and Federal Scenic Byway). Limited vegetation treatments over the last few decades have resulted in the lack of viewing opportunities from the designated scenic byway. Therefore, there is the need to maintain pleasing views along the portion of Highway 37 within the boundaries of the Project Area to accommodate this use. These improvements would move recreational settings and facilities toward the desired condition as

[1] "The Wildland Urban Interface is commonly described as the zone where structures and other human development meet and intermingle with undeveloped wildland and vegetative fuels. The WUI zone poses tremendous risks to life, property, and infrastructure in associated communities and is one of the most dangerous and complicated situations firefighters face" (*Lincoln County, Montana – Community Wildfire Protection Plan, p.6*).

described in the KNFP.

PROPOSED ACTION

To meet the purpose and need for action, the Proposed Action (Alternative 2) would implement the following activities (see Chapter 2, Alternatives Considered in Detail section for detailed information on the proposed activities):

- Vegetation treatments including timber harvest and associated fuels treatments (8,845 acres), and precommercial thinning (5,775 acres). These treatments will help maintain ecosystem function and vegetative health as well as reduce fuels and provide timber products.
- Fuel treatments (1,378 acres) are proposed to reduce hazardous fuels by utilizing a combination of prescribed fire and/or mechanical treatments. Almost all of these units are immediately adjacent to private property and are intended to reduce hazardous fuels. Prescribed burning could include underburning, jackpot burning, or pile burning. Mechanical treatments may include a combination of hand slashing, grapple piling, chipping, mastication, or mechanical product removal.
- Fuel and Wildlife treatments (10,049 acres) are proposed to be burned and/or slashed over the next ten years. The purpose of these treatments is to enhance the wildlife habitat and browse in the area, to reduce hazardous fuels and to reintroduce fire to the ecosystem.
- New permanent road construction (9.3 miles) to access proposed harvest units, cost-share roads and access to dispersed camp sites.
- Temporary road construction (4.3 miles) to access proposed harvest units.
- Road reconstruction and best management practice (BMP) implementation on haul routes (176 miles) to provide access while reducing the impact of the road system on water quality.
- Trail access changes from motorized to non-motorized (37 miles) to improve big game security habitat.
- Road storage activities (16 miles) as identified in the East Reservoir Travel Analysis Process (TAP) within the Cripple Planning Subunit. These treatments would help improve water quality in the analysis area by removing chronic sources of sediment. A copy of the East Reservoir TAP is included in the project file.
- Undetermined roads are roads that exist on the ground but are not officially part of the road system that includes maintenance. Undetermined roads are proposed to be either added to the National Forest System (NFS) of roads (13.5 miles) or decommissioned (3.24 miles).
- Cost-share of roads within the analysis area includes the Forest Service investing in roads on State lands (5miles) and the DNRC investing in roads (22 miles) on National Forest Service lands.
- Improvements of dispersed campsites and reconstruction of access roads to dispersed campsites along the Koocanusa Reservoir.

LAWS and POLICY

Development of this DEIS follows the National Forest Management Act (NFMA), 16 U.S. Code 1604; Title 36, Code of Federal Regulations, Part 220 (36 CFR 220); and Council of Environmental Quality, Title 40; CFR, Parts 1500-1508, National Environmental Policy Act (NEPA).

Many federal and state laws, including the Endangered Species Act, Clean Air Act, and Clean Water Act also guide this analysis. Following is a brief description of the laws and policies applicable to this analysis:
American Antiquities Act of 1906: This Act makes it illegal to appropriate, excavate, injure, or destroy any historical, prehistoric ruin or monument, or any object of antiquity, situated on lands owned by the Government of the United States, without permission of the Secretary of the Department of the Agency having jurisdiction over the lands on which said antiquities are situated.

National Historic Preservation Act of 1966, as amended: This Act requires Federal agencies to consult with American Indian Tribes, State and local groups before nonrenewable cultural resources, such as archaeological and historic structures, are damaged or destroyed. Section 106 of this Act requires Federal agencies to review the effect project proposals may have on cultural resources in the project area.

Endangered Species Act of 1973, as amended: The purposes of this Act are to "*provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such tests as may be appropriate to achieve the purpose of the treaties and conventions set forth in subsection (a) of this section."* The Act also states "*It is further declared to be the policy of congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act."*

Migratory Bird Treaty Act of 1918: This Act is to establish an international framework for the protection and conservation of migratory birds. The Act makes it illegal, unless permitted by regulation, to *pursue, hunt, take, capture, deliver for shipment, ship, cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, including in this Convention…for the protection of migratory birds…or any part, nest, or egg of any such bird"* (16 USC 703). The original 1918 statue implemented the 1916 Convention between the United States and Great Britain (for Canada). Later amendments implemented treaties between the United States and Mexico, Japan, and the Soviet Union (now Russia).

National Environmental Policy Act (NEPA) of 1969 as amended: Purposes of this Act are "To declare a national policy which will encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nations; and to establish a Council on Environmental Quality" (42 USC Sec. 4321). The law further states "*it is the continuing policy of the Federal Government, in cooperation, to use all practical means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the present and future generation of Americans."* This law essentially pertains to public disclosure and participation, environmental analysis, and documentation.

Clean Water Act, as amended in 1977 and 1982: Primary objective of this Act is to restore and maintain the integrity of the Nation's waters. This objective translates into two fundamental national goals: 1) Eliminate the discharge of pollutants into the nation's waters; and 2) Achieve water quality levels that are fishable and swimmable. This Act established a non-degradation policy for all federally proposed projects. Under Section 303(d) of the Clean Water Act, the State has identified water quality-limited water bodies in Washington.

Clean Air Act, as amended in 1990: Purposes of this Act are "*to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population; to initiate and accelerate a national research and development program to achieve the prevention and control of air pollution; to provide technical and financial assistance to state and local governments in connection with the development and execution of their air pollution prevention and control programs; and to encourage and assist the development and operation of regional air pollution prevention and control programs."*

Multiple-Use Sustained-Yield Act of 1960: This Act requires the FS to manage NFS lands for multiple uses (including timber, recreation, fish and wildlife, range and watershed). All renewable resources are to be managed in such a way that they are available for future generations. The harvesting and use of standing timber can be considered a short-term use of a renewable resource. As a renewable resource, trees can be re-established and grown again if the productivity of the land is not impaired.

Migratory Bird Executive Order (EO) 13186: On January 10, 2001, President Clinton signed an Executive Order (EO 13186) titled "Responsibilities of Federal Agencies to Protect Migratory Birds." This EO required the "*environmental analysis of Federal actions, required by NEPA or other established environmental review processes, evaluated the effects of actions and agency plans on migratory birds, with*

emphasis on species of concern."

Floodplains and Wetlands (EO 11988 and 11990): These 1977 orders are to "…*avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development…"* and similarly "…*avoid to the extent possible the long and short-term adverse impact associated with the destruction or modification of wetlands*."

Executive Order 13112 (invasive species): This 1999 order requires Federal agencies whose actions may affect the status of invasive species to identify those actions and within budgetary limits, "*(i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species…, (iii) monitor invasive species populations…, (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded, … (v) promote public education on invasive species…and not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species… unless, pursuant to guidelines that it has prescribed, the agency had determined and made public… that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions."*

Executive Order 13287 (preserve America): This 2003 order's intent is to preserve America's heritage though "*actively advancing the protection, enhancement, and contemporary use of the historic properties owned by the Federal Government… The Federal Government shall recognize and manage the historic properties in its ownership as assets that can support department and agency missions while contributing to the vitality and economic well-being of the Nation's communities and fostering a broader appreciation for the development of the United States and its underlying values…"*

Environmental Justice (EO 12898): On February 11, 1994, President Clinton signed Executive Order 12898. This order directs each Federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. On the same day the President also signed a memorandum emphasizing the need to consider these types of effects during NEPA analysis. On March 24, 1995, the Department of Agriculture completed an implementation strategy for the executive order. Where Forest Service proposals have the potential to disproportionately and adversely affect minority or low-income populations these effects must be considered and disclosed (and mitigated to the degree possible) through the NEPA analysis and documented.

Prime Farmland, Rangeland, and Forestland Memorandum: All alternatives are in accordance with the Secretary of Agriculture's Memorandum 1827 for prime farmland, rangeland, and forestland. "Prime" forestland is a term used only for non-Federal land.

National Forest Management Act (NFMA) of 1976: This act guides development and revision of National Forest Land Management Plans and has several sections to it ranging from required reporting that the Secretary must submit annually to Congress to preparation requirements for timber sale contracts. There are several important sections within the act. The National Forest Management Act of 1976 (NFMA), as implemented by the Code of Federal Regulations, states that "when trees are cut to achieve timber production objectives, the cuttings shall be made in such a way as to assure that the technology and knowledge exists to adequately restock the lands within 5 years after final harvest."

Roadless Area Conservation Rule (2001): The Roadless Area Conservation Rule was adopted by the U.S. Forest Service on January 12, 2001, after extensive public involvement as part of federal rulemaking. It generally prohibited road construction and timber cutting in 58.5 million acres of inventoried roadless areas, covering about 30 percent of the National Forest System. Court rulings make special exceptions for portions of the Tongass NF and NFS lands in Idaho. Thus, the Forest Service may not undertake activities that violate the Roadless Rule on 40 million out of the 58.5 million total acres of inventoried roadless areas.

RELATIONSHIP TO THE FOREST PLAN

National forest planning takes place at several levels, including: national, regional, forest, landscape, watershed and project levels. The East Reservoir EIS is a project-level analysis; its scope is confined to addressing the significant issues and possible environmental consequences of the project. It does not attempt to address decisions made at higher levels. It does, however, implement direction provided at those higher levels.

The Kootenai National Forest Plan (1987), as amended by the Inland Native Fish Strategy (INFS) details the direction for managing the land and resources of the Kootenai National Forest. The KNFP embodies the provisions of the NFMA, its implementing regulations and other guiding documents.

The 1987 Kootenai National Forest Land Management Plan (Forest Plan) specifies Forest-wide goals regarding timber harvest and vegetation management (Forest Plan, Volume I, Chapter II, pages 1-2):

> *"Provide a sustained yield of timber volume responsive to National and Regional needs, scheduled to encourage a stable base of economic growth in the dependent geographic area."*
>
> *"Use prescribed fire to simulate natural ecological processes, prevent excessive natural and activity fuel buildups, create habitat diversity for wildlife, reduce suppression costs, and maintain ecosystems."*

The Forest Plan also specifies (Forest Plan, Volume I, Chapter II-4, 5):

> *"Insect and disease will be controlled to historic endemic levels, and lodgepole pine will be harvested prior to future outbreaks of mountain pine beetle. Other problems such as root rot, mistletoe, blister rust, and spruce budworm will be addressed in silvicultural prescriptions utilizing integrated pest management strategies and treatments."*
>
> *"Roads, including capital investment roads, will be built to access harvest areas on schedule."*
>
> *"The visual resource will be inventoried, evaluated, and managed throughout all management activities. Consideration of the visual resource will guide all activities seen from major travel corridors and local communities."*

Regarding soil and water, the Forest Plan states (Forest Plan, Volume I, Chapter II-7):

> *"Ground-disturbing activities such as road construction, road reconstruction and timber harvest will be accompanied by mitigating measures to prevent or reduce increases in sedimentation and stream channel erosion. The amount of harvest allowed will depend on the rate of hydrologic recovery after timber has been removed."*
>
> *"Each project plan for which use of heavy equipment is required shall evaluate the effect of operating that equipment on soil productivity."*

Management Areas provide for a unique combination of activities, practices, and uses. Chapter III of the Forest Plan contains a detailed description of each MA. Table 1 displays a summary of the applicable MAs and standards for this project. This project is consistent with applicable Forest Plan standards and goals.

The Forest Plan is one of many documents that provided guidance and contributed to the development of this project. Other documents include:

- *USDA Forest Service Strategic Plan for Fiscal Years 2007-2012*
- *Integrated Restoration and Protection Strategy in the Northern Region*

- *Northern Region Overview Detailed Report (1998)*
- *2001 National Fire Plan (PF Doc. CR-033); Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy, 2006*
- *Interior Columbia Basin Strategy*

FOREST PLAN MANAGEMENT AREAS

The KNFP uses management areas (MAs) to guide management of the NFS lands within the KNF. Each MA provides for a specific combination of activities, practices and uses. Treatments including timber harvest, precommercial thinning and fuel reduction are proposed in fourteen MAs, which are described in Table 1. There are no activities proposed to occur in wilderness or roadless areas within the analysis boundary. Goals, objectives and desired conditions of each are summarized, and their locations are shown on the Management Areas map in the map section of this document. Chapter III of the KNFP contains a detailed description of each MA.

Table 1- Management Area Descriptions

MA	DESCRIPTION	ACRES
2	**Semi-primitive Non-motorized Recreation (Unsuitable Timberland):** This MA is characterized by a natural appearing environment offering roadless recreation opportunities. The goal is to provide for the protection and enhancement of areas for roadless recreation use and to provide for wildlife management where specific wildlife values are high.	**1,683**
3	**Recreation (Unsuitable):** This MA consists of lands with a natural-appearing environment and a minimal number of adjacent or internal roads offering roaded recreation opportunities. The goal is to provide opportunities for dispersed recreation activities in a natural appearing environment using trails and primitive roads for access.	**1,533**
5	**Viewing Areas (Unsuitable Timberland):** This MA contains the often-viewed foreground and mid-ground areas in highly sensitive viewsheds. The goal is to maintain or enhance the landscape to provide a pleasing view, provide forage for domestic livestock and big game and provide old growth timber and cavity habitat for dependent wildlife species.	**1,316**
6	**Developed Recreation Sites (Unsuitable Timberland):** This MA includes developed campgrounds, picnic areas, boat ramps and other developed recreation sites. The goal is to provide safe and sanitary developed recreation in a setting that is pleasant and visually attractive.	**149**
10	**Big Game Winter Range (Unsuitable Timberland):** This MA is found alongside drainages of the major river valleys and contains mostly steep ground of low timber productivity. The goal is to maintain or enhance the winter habitat effectiveness for big game.	**4,136**
11	**Big Game Winter Range (Suitable Timberland):** Used by most species of big game for winter range. Found at lower elevations in most major drainages and the topography ranges from steep to moderate and rolling topography. Timber productivity is moderate to high. The goal is to maintain or enhance winter-range habitat effectiveness for big-game species while producing a programmed yield of timber and maintaining the viewing resource in areas of high visual significance	**8,526**
12	**Big-Game Summer Range (Suitable Timberland):** This MA is generally located at or above 4,000 feet. It is characterized by suitable timber producing sites and moderate to rolling topography. The goal is to maintain or enhance non-winter big game habitat and produce a programmed yield of timber.	**21,393**
13	**Designated Old Growth Timber (Unsuitable Timberland):** This MA consists of parcels of existing old growth or mature timber stands which contain components of old growth. The goal is to provide the special habitat necessary for old growth dependent species on a minimum of 10% of each major drainage on the Forest, and in units that represent the major habitat types and tree species of each drainage.	**7,850**
15	**Timber Production (Suitable Timberland):** This MA is found at medium elevations on moderate topography and is characterized by its ability to produce timber using standard silvicultural systems and conventional harvest methods. The goal focuses on timber production while providing other resource values.	**20,432**

MA	DESCRIPTION	ACRES
16	**Timber with Viewing (Suitable Timberland):** Characterized by productive forest land that has moderate viewing sensitivity. This MA is usually in the mid-ground or background as viewed from major travel corridors or the foreground to mid-ground of well-traveled, but secondary travel corridors. This MA is not critical to wildlife existence or population goals. The goal is to produce timber while providing for a pleasing view. Wildlife habitat will be managed for viable populations of existing native species.	**2,649**
17	**Viewing with Timber (Suitable Timberland):** Characterized by productive forest land with high viewing sensitivity in the foreground or mid-ground of major travel corridors. This MA is not critical to wildlife existence or population goals. The goal is to maintain or enhance a natural appearing landscape to provide a pleasing view, produce a programmed volume of timber and manage the habitat to provide for viable populations of existing native wildlife species.	**2,669**
18	**Regeneration Problem Areas (Unsuitable Timberland):** This MA is distinguished by the difficulty in establishing coniferous regeneration after timber harvest. It occurs on slopes in excess of 40%. The goal is to maintain existing vegetation until it is insured that timber can be harvested and the area regenerated within 5 years of harvest.	**2,562**
19	**Steep Lands (Unsuitable Timberland):** This MA occurs on steep slopes and breaklands over 60%. The goal is to insure soil stability and water quality by maintaining the vegetation in a healthy condition and by minimizing surface disturbance.	**2,544**
24	**Low Productivity Areas (Unsuitable Timberlands):** This MA usually occurs in small parcels at mid to high elevations and has relatively little productive capacity. It is moderate to steep, usually rocky with thin soils, and often occurs on glacially-scoured ridgetops, walls, or talus slopes. The goal is to manage for site protection and for any wildlife resources that may be inherent.	**1,035**
N/A	**Water**	**69**

TIERING and INCORPORATING by REFERENCE

In order to eliminate repetition and focus on site-specific analysis, this DEIS is tiered to the following documents as permitted by 40 CFR 1502.20.

- The ***Kootenai National Forest Land and Resource Management Plan (KNFP)*** **FEIS** and Record of Decision (ROD), 1987 and all subsequent NEPA analysis for amendments, and the accompanying ***Land and Resource Management Plan (LRMP)*** **as amended (Forest Plan).** The KNFP guides all natural resource management activities and establishes management standards and guidelines for the KNF. It describes resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management.

This DEIS also incorporates by reference the following documents:

- The **Biological Opinion for the *Implementation of Inland Native Fish Strategy (INFS***) from National Marine Fisheries Service dated January 23, 1995. INFS sets in place certain riparian management goals and management direction with the intent of arresting the degradation and beginning the restoration of riparian and stream habitats.

- The **Biological Opinion for the *Effects to Bull Trout from Continued Implementation of Land and Resource Management Plans and Resource Management Plans as Amended by the Interim Strategy for Managing Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, Western Montana, and Portions of Nevada (INFIS)*** from National Marine Fisheries Service, dated August 14, 1998. This BO addresses the effects of continued implementation of LRMPs as amended by INFS standards and guidelines where listed distinct population segments of bull trout occur in Idaho, Montana, Oregon, and Washington.

- The **Record of Decision and Biological Opinion for the *Northern Rockies Lynx Management Direction (March 2007),*** from the U.S. Forest Service. This decision amended into all Forest Plans in the planning area, which includes the Kootenai National Forest. The BO addresses the effects of

continued implementation of the Kootenai's LRMP as amended by the associated lynx management standards and guidelines.

- The annual ***Forest Plan Monitoring and Evaluation Reports*** from 2000 through 2011. The main focus of the Kootenai's monitoring strategy is to ensure consistency in implementing the KNFP.
- The Record of Decision and EIS for the ***Kootenai National Forest Invasive Plant Management***, Kootenai National Forest, April 2007, which Implements a long-term integrated weed management program for projects beginning in 2007.
- The ***Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin*** released 1996. Links landscape, aquatic, terrestrial, social, and economic characterizations to described biophysical and social systems.
- The Record of Decision and EIS for the ***Forest Plan Amendments for Motorized Access within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones*** **(for Kootenai, Lolo, and Idaho Panhandle National Forests) released in November 2011.** This is a programmatic decision to change the Forest Plans for these Forests by amending the objectives, standards and guidelines that address grizzly bear management within the Selkirk and Cabinet-Yaak recovery zones.

PROJECT RECORD

This DEIS hereby incorporates by reference the entire project record [40 CFR 1502.21]. The project record contains resource specialist reports and other technical documentation used to support the analysis and conclusions in this DEIS. Other sources of information, documents, published studies and books referred to in the project record and this document are also included.

Relying on specialists reports and the project record helps implement the CEQ's regulation provision that agencies should reduce NEPA paperwork (40 CFR 1500.4), that environmental documents shall be analytic rather than encyclopedic, and that EISs/EAs shall be kept concise and no longer than absolutely necessary (40 CFR 1502.2). The objective is to furnish enough site-specific information to demonstrate a reasoned consideration of the environmental effects of the alternatives and how these effects can be mitigated, without repeating detailed analysis and background information available elsewhere. Additional documentation and more detailed analyses of project area resources are located in the East Reservoir project record located at the Libby Ranger District, Libby, Montana.

PROJECT SCOPE

Section 40 CFR 1508.25 of the NEPA implementing regulations provides guidance in determining the proper scope of an EIS.

Geographic Scope

The Libby Ranger District is preparing this EIS to document the analysis and disclose the environmental effects of a proposed project on NFS lands in the East Reservoir analysis area.

Temporal Scope

The action alternatives would result in timber sales that would be planned for bid for ten years (2013 – 2023). The sale activities would likely be completed within four years from the start of the sale, with slash disposal and reforestation activities completed within four years of the sale activities being complete. Construction and storage of specified roads would occur within the timeframes identified for the timber sale. Typically, BMP work on haul roads would be accomplished prior to haul of timber products. Precommercial thinning activities would likely be accomplished by 2023. Road storage activities are also likely to be completed by 2023. These dates are tentative, based upon anticipated budgets, work force, weather, the timber market and other considerations. Actual dates and timing of implementation and accomplishment could vary.

Administrative Scope

Alternatives to the proposed action were developed to address issues identified both by the public and the interdisciplinary team. The no-action alternative (Alternative 1) was also analyzed, and reflects the current status and administrative activities within the analysis area.

The proposed action, Alternative 2, includes those activities necessary to fulfill the identified purpose and need, as well as all connected actions as described in Chapter 2. Actions necessary to meet the purpose and need include vegetation treatments such as timber harvest, precommercial thinning and fuel reduction; road storage and temporary road construction. Connected actions include road work on existing roads, best management practices (BMPs), design features and management measures, and activities on U.S. Army Corps of Engineer lands described in Chapter 2.

Three types of effects are considered in the analysis, pursuant to 40 CFR 1508.7 and 40 CFR 1508.8: direct, indirect and cumulative effects. These effects are disclosed in Chapter 3.

DECISIONS TO BE MADE

1. Whether to implement vegetation management activities (silvicultural prescriptions, logging methods, slash treatment, reforestation, fuel reduction, precommercial thinning, and management measures and design features to protect resources and the site-specific location of these activities and practices would occur.
2. Whether to construct temporary roads to access proposed timber harvest units.
3. Whether to implement road storage and decommission activities to improve watershed condition and, if so, where.
4. Whether to construct new permanent roads to harvest units and recreation sites.
5. Whether to make improvements to recreation sites.
6. Whether to change motorized trails to non-motorized trails.
7. Whether to cost-share roads with DNRC and/or PCTC.
8. What, if any, specific project monitoring requirements are needed to assure management measures and design features are implemented and effective, or to evaluate success of project objectives.
9. Whether to request Regional Forester approval for regeneration units over 40 acres.

East Reservoir Project DEIS

Chapter 2

Alternatives

INTRODUCTION

Section 102 (2)(E) of the National Environmental Policy Act (NEPA) requires the Forest Service (FS) to study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources. This chapter introduces and describes the alternative development process, including how public comments helped formulate the alternatives; the alternatives considered but eliminated from detailed study; and the alternatives considered in detail. Two action alternatives are carried forward and analyzed in detail in Chapter 3, along with the no-action alternative.

The no action alternative (Alternative 1) is used as a baseline condition to help understand potential impacts that would be associated with implementation of the proposed action (Alternative 2) and the action alternative to the proposed action (Alternative 3). This chapter provides a comparison of these alternatives and how they address the purpose and need for action and potential issues, providing a clear comparison for the decision maker and the public.

Design features were developed to anticipate and reduce the effects from the proposed action on the environment and address and resolve the issues described in this chapter. Maps showing alternatives considered in detail are located in the Map Section of this document. Tables 2.35 and 2.36 at the end of this chapter display a comparison of how well the alternatives meet the objectives of the purpose and need and significant issues.

The scoping process required by the NEPA (40 CFR 1501.7) to have an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action was followed. The Kootenai National Forest (KNF) invited participation from federal and state agencies, local Tribes, environmental groups and individuals interested in, or affected by, the proposed action.

The Interdisciplinary Team (IDT) developed the proposed action in response to the project purpose and need, KNFP objectives, goals and standards, and public and agency concerns as directed by NEPA. The IDT consisted of FS personnel who have expertise in different natural resource fields in order to provide a diverse, interdisciplinary approach to the project. The final proposed action was developed and refined through a series of resource evaluations, field visits, IDT meetings, and public interactions, and was crafted specifically to avoid adverse impacts to the environment.

ALTERNATIVE DEVELOPMENT PROCESS

PUBLIC INVOLVEMENT

Proposed Action Development

Public involvement was initiated for this project on December 21, 2010, with the scoping letter, which was mailed to approximately 80 entities. A display ad soliciting information and comments on the project was published in *The Western News* and a legal ad published in the Kalispell *Daily Inter Lake* on December 24, 2010. A notice of intent to prepare an environmental impact statement (NOI) was also filed in the Federal Register on November 15, 2010. The district received 14 written responses. All comments are located in the project file at the district and have been considered in the NEPA process.

ISSUE IDENTIFICATION

The scoping comments were reviewed by the IDT and Decision Maker and categorized. Some comments were determined to be outside the scope of this project or are addressed in the Forest Planning process. Other comments are addressed through law, regulation and policy, management measures and design features described in this chapter, or by displaying the effects of the no-action versus the action alternatives.

Concerns representing an unresolved conflict with the Proposed Action have been brought forward as

"Significant Issues" and were used to help formulate alternatives to the Proposed Action. Documentation of the issue identification process is contained in the project file.

One federal agency, eight individuals, one State and four organized groups submitted questions seeking clarification, suggested specific analyses, or raised concerns during the scoping process about potential environmental effects of the proposed action. Based on public input, the IDT recommended and the Responsible Official approved the issue topics listed below for detailed study. Each topic is briefly described in this section along with units of measure (indicators) used in the analysis process for each issue.

Significant Issues
Internal and external comments revealed issues representing unresolved conflict with the Proposed Action (Alternative 2). The following issues were significant in developing alternatives to the Proposed Action.

- **Regeneration Units over 40 acres:** Regeneration units that are over 40 acres in size do not meet Kootenai National Forest Plan (KNFP) standards for MAs 11, 12 and 15. Forest Service policy (FSM 2471) states that the size of harvest openings created by even-aged silviculture in the Northern Region will be normally 40 acres or less. Creation of larger openings will require 60-day public review and Regional Forester approval.

  The National Forest Management Act of 1976 [USC 1604 (g) (3) (F) (IV)], establishes opening size limits according to geographic areas, forest types or other suitable classifications. Regulations establish the size limit for our geographic area at 40 acres, with exceptions for larger openings when they will produce a more desirable combination of net public benefits.

  Resolution: Concerns of regenerations units exceeding 40 acres can be addressed by altering the shape of the unit and or leaving leave islands within the interior of the unit. These strategies address distance to cover, making the unit more available to wildlife species during daylight hours. Alternative 3 best addresses this issue by either re-shaping units to meet 600 feet to cover or reducing units down to 40 acres or less in size.

- **Impact to Old Growth Forest Stands:** There is a concern that there is not enough old growth in the East Reservoir analysis area and that treatments are prescribed in old growth. Issue indicators include acres of vertical structure removed (acres of direct harvest/burning) in designated old growth, acres of harvest in undesignated effective OG, acres of harvest in undesignated replacement old growth, road length built adjacent or through designated old growth (in feet), number of proposed units adjacent to old growth, acres of edge effect in old growth, acres of interior habitat remaining in old growth and percent of designated old growth (OG/ROG) in the Cripple Planning Subunit (PSU).

  Resolution: Remove vegetation treatments in old growth. Alternative 3 best addresses this issue by avoiding all treatments in old growth including fuels treatments and prescribed burns. Alternative 2 maintains fuel treatments (~173 ac) in some old growth such as in VRU 2.

- **Closing of approximately 36.6 miles of motorized trails in project area would limit motorized user access.**
  Resolution: Leaving some of the 36.6 miles of currently open motorized trails open to the public as motorized. Alternative 3 best addresses this issue by proposing a 21.3 mile ATV loop, created by leaving approximately 7.1 miles of motorized trail open in the Boundary Mountain area.

Other Issues
The issues discussed previously have been addressed through the development and analysis of alternatives to the proposed action. Other issues were not considered key issues because they were resolved through project design or management measures and, therefore, were not used to develop alternatives analyzed in detail. Other issues include effects of the proposed action on biodiversity, cultural resources, threatened, endangered and sensitive species, and soils. Analysis of these issues is found in the applicable resource

sections in Chapter 3 and in the project file. Criteria used to determine lack of significance include:

- Issue is beyond the scope of the proposed action.
- Issue already decided by law, regulation, KNFP, or other higher-level decision.
- Issue is not supported by scientific evidence.
- Issue has limited distribution, duration, and intensity.
- Issue can be addressed in the proposed action and other alternatives through design criteria or management measures.

RANGE OF ALTERNATIVES

Section 102(2)(e) of National Environmental Policy Act (NEPA) states that all Federal agencies shall "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflict concerning alternative uses of available resources".

An Environmental Assessment of resources must also "rigorously explore and objectively evaluate all reasonable alternatives" [40 CFR 1502.14(a)]. The courts have established that this direction does not mean that every conceivable alternative must be considered, but that selection and discussion of alternatives must permit a reasoned choice and foster informed decision making and informed public participation.

The range of alternatives may extend beyond the limits set by the KNFP goals and objectives under the NEPA; however, the National Forest Management Act (NFMA) requires that the selected alternative fully comply with the KNFP unless the plan is amended. The proposed action, Alternative 2, proposes timber harvest activities resulting in regeneration harvest larger than 40 acres. This alternative would require a KNFP amendment for removing hiding cover and movement corridors that result in openings greater than 40 acres in MA12 (see Chapter 3, Wildlife Section for more information on hiding cover and openings). The KNFP standard for opening sizes in MA 12 is to maintain movement corridors of at least two site distances (400 feet) between openings, and generally not to exceed openings over 40 acres (KNFP p. III-49, Wildlife and Fish standards #7). Table 2.13 displays the units involved in opening greater then 40 acres.

Alternative 2 also proposes units that do not meet visual quality objectives (VQOs) prescribed in the KNFP and will need Forest amendments. VQOS are used to estimate the effects of human caused changes to the scenic resource. It is a comparison of the visual appearance of a proposed action to the landscape character and existing condition of the surrounding area. KNFP amendments will be needed for management areas (MAs) 12 (Unit 362), 15 (Units 36, 40, 62, 75, 80, 147, 148, 149, 150, 170, 188) and 16 (Units 73T, 80, 188). See Table 2.13. For more information, refer to pg. 20 for explanations of the amendments needed.

The range of alternatives presented in this chapter was determined by evaluating public and internal comments and the Purpose and Need for the project. This project is intended to re-establish, restore and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions (climate change) by enhancing species diversity and managing density; Create a heterogeneous landscape that provides a variety of habitats to sustain populations of terrestrial and aquatic species; provide forest amenities, jobs and products; reduce hazardous fuels adjacent to private property and across the landscape while re-introducing fire to the ecosystem; and enhance recreation settings and facilities with the goal of providing high quality experiences. Other factors include KNFP goals, objectives, desired condition, standards and guidelines; federal laws, regulations, and policies, and timber sale feasibility. The alternatives developed by the IDT and Decision Maker display a reasonable range of outputs, treatments, costs, management requirements, management measures, and effects on resources.

In addition to the alternatives considered in detail, the IDT and Decision Maker examined another alternative during the analysis process. Although this alternative contributed to the reasonable range, it was eliminated from further consideration for the reasons listed below.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Alternative 5 addressed public comments concerning no road storage and no change in motorized trail

access. Some of the public was concerned that road storage would limit access for public recreation and forest management. Some public felt that changing motorized trails to non-motorized trails would decrease access for public recreation. Alternative 5 was not analyzed in detail for several reasons. First, road storage (intermittent stored service) is a category to manage existing roads that have adverse impacts on watershed quality. The roads would be closed to traffic and left in a condition that there is little resource risk if maintenance is not performed. Second, road storage would not measurably impede future forest management. Roads that are not needed in the short-term (10 to 20 years), but would likely be needed at some time in the future would be stored. Storage may include surface ripping, seeding and/or cross ditching and may include some sections of partial road recontouring as needed on a site-specific basis, but the majority of the road prism would be retained for future access needs. The majority of road prisms would be left in place based on the Travel Analysis Process (TAP), most of these roads are not needed for short-term (10 to20 yrs.) access for commercial timber management. The TAP can be found in the Project File.

Action Alternative 4 was also developed to address public concerns on regeneration treatment units over 40 acres, treatments in old growth, treatments in lynx habitat, and motorized trail access. However, subsequent to the application of design measures for both Alternatives 2 and 3, Alternative 4 did not measurably add to the range of alternatives and was dropped as all public and internal concerns were addressed fully in Action Alternatives 2 and 3.

PROJECT COLLABORATION

Project designs and activities of Alternatives 2 and 3 reflect a number of meetings and field visits to the analysis area with the Kootenai Forest Stakeholder Coalition (KFSC). The Stakeholders' mission is to include "…a diverse group…to define common ground by implementing projects on natural resource issues." Issues such as landscape connectivity (long- and short-term), lynx habitat, economics, job and product opportunities, fuel management, access and overall ecosystem health were major topics of discussion amongst the participants.

Much of the Stakeholders' efforts, interest and concerns were incorporated into the development and shaping of the alternatives. The KFSC ultimately "…were looking at this project as a model of how our coalition might reach consensus on forest management". The KFSC web page is available at: http://www.kootenaistakeholders.org.

ALTERNATIVES CONSIDERED IN DETAIL

ALTERNATIVE 1 (No-Action)

The National Environmental Policy Act (NEPA) requires that an EIS include a "no-action" alternative to serve as a baseline to compare action alternatives. The no-action alternative is based on the premise that ecosystems change, even in the absence of active management. It is essentially a "status quo" strategy that allows current activities and policies, such as recreation administration, road maintenance and fire suppression to continue. It proposes no actions that are contained in the action alternatives. This alternative provides a baseline for comparison of environmental consequences of the other alternatives to the existing condition (36 CFR 1502.14) and is a management option that could be selected by the Responsible Official. The no-action alternative and the effects analysis are based on the following assumptions:

- Species diversity, stocking density and successional stages consistent with reference conditions is better adapted and therefore more resistant and resilient to disturbances. Without disturbance this landscape would continue to trend away from reference conditions for species diversity. There would be no prescribed fire, regeneration harvest and planting western white pine, western larch and ponderosa pine in the no action alternative.
- Restoring tree stocking densities through commercial thinning, precommercial thinning, regeneration harvest and planting would not occur. These stands would not trend towards reference density conditions. The risk of tree mortality from insect and disease infestations, primarily mountain pine beetle, would likely increase on the dry land sites and in lodgepole pine (LPP) stands. Wildfire potential and intensity would also remain higher than reference conditions

- Trending successional stages toward reference condition levels through improvement harvests and regeneration harvests would not occur. Restoring successional diversity across the landscape that is better adapted to disturbances would not occur.
- In concert with continued wildfire suppression, encroachment of Douglas-fir would continue in the dry ponderosa pine habitat types creating an increased fire risk in the wildland-urban interface (WUI).
- Existing motorized trails would not be closed which would maintain security habitat at less than desired secure habitat by seven percent within the analysis area for large mammals including moose, elk, deer, sheep and wolves.
- Without weed treatment and burning activities, shrub and grass species in the natural openings would continue to decline in value as browse for big game. Weed treatment would continue consistent with Weed EIS and funding, but would not be increased and may not keep up with the expansion of noxious weeds.
- With continued fire suppression, conifer encroachment on bighorn sheep escape habitat would result in higher risk of mortality from predators because increased cover would be provided for stalking predators.
- Lack of forest regeneration in concert with fire suppression would result in less early successional forest which provides snowshoe hare foraging habitat, thus likely reducing prey numbers for the threatened Canada lynx.
- Natural regeneration of seral species such as ponderosa pine and western larch would be minimal. These species are better adapted to disturbance such as fire and were present in larger numbers historically.
- Precommercial thinning would not occur, allowing overstocked sapling-size stands to become stagnant and allowing shade-tolerant species to dominate.
- Improperly installed or undersized culverts would continue to impede aquatic organism passage and have a higher likelihood for plugging and failing than properly-sized culverts.
- There would be no management for visuals along Scenic Byway 37.
- There would be no a jobs or labor income associated with timber harvest and other resource activities.

ALTERNATIVE 2 (Proposed Action)

Alternative Design: The proposed action was designed to meet the purpose and need and address issues and concerns identified internally and from the public and with collaboration with the KFSC.

The following treatments are specific to the proposed action (Alternative 2) and include vegetative treatments including: timber harvest, slash treatment, site preparation, prescribed burning, tree planting, and precommercial thinning that move the landscape toward desired conditions. Other activities of this action alternative are access management changes, construction of new roads, road storage and decommissioning activities, temporary road construction, implementation of BMPs, wildlife habitat enhancement and improvement of recreation settings, opportunities and experiences.

Vegetation Treatments Including Timber Harvest:

The timber harvest, prescribed fire and precommercial thinning proposed in this alternative are designed to meet the purpose and need. A total of approximately 15, 988 acres of vegetation treatment are proposed using a variety of methods (timber harvest, precommercial thinning, commercial thinning, prescribed fire).

Timber harvest would meet one or more of the following objectives for vegetation management. See Table 2.0 for a detailed description of proposal.

- Enhance species diversity trending toward reference conditions (Vegetation Section, Chapter 3) which are better adapted and more resistant and resilient to disturbances. This would occur through regeneration harvest and planting western white pine, western larch and ponderosa pine.
- Move timber stand towards tree stocking densities through commercial thinning, regeneration harvest and planting trending the stands towards reference density conditions. The risk of tree mortality from

insect and disease infestations, primarily mountain pine beetle, would decrease with density reduction especially on the dry land sites and in LPP stands.

- Restoration toward reference condition levels of successional stages through improvement harvests and regeneration harvests. This alternative would restore successional stage diversity across the landscape that is better adapted to disturbances and will provide foraging areas for various wildlife species including Canada lynx, grizzly bears, large ungulates, and various small mammals.
- Encroachment of Douglas-fir would be reduced on the dry ponderosa pine habitat types, in turn reducing the fire risk in the wildland-urban interface (WUI).

Various harvest methods are prescribed depending on individual stand conditions. These include group select/improvement cuts that reduce stand density, sanitation salvage, shelterwood with reserves, seedtree with reserves and clearcut with reserves harvests.

The harvest acres would be approximately 8,845. Approximately 88% of the proposed harvest units would be implemented utilizing ground-based systems (tractor yarding) and 12% with a skyline system due to steep slopes.

Table 2.0 displays the proposed units along with acres, silvicultural treatment and management area (MA) (Map 2). The shaded units are units that would require winter logging to avoid excess detrimental soil disturbance, excessive weed spread or protection of a cultural site.

Table 2.0 – Alternative 2 Proposed Harvest Units

UNIT	ACRES	TREATMENT	MA	LOGGING SYSTEM
1	50	IMP/S/GP	11, 16	Winter Tractor
1A	11	SW/S/GP	11, 16	Winter Tractor
2	13	ST/S/UB/PLT	11, 16	Winter Tractor
2B	48	IMP/S/GP	11	Winter Tractor
2C	9	IMP/S/GP	11, 12, 24	Winter Tractor
2D	67	IMP/S/GP	11	Winter Tractor
3	27	ST/S/UB/PLT	11, 16	Winter Tractor
3A	26	IMP/S/GP	11	Winter Tractor
3B	37	IMP/S/GP	11	Skyline
3C	13	ST/S/GP/PLT	11	Tractor
4	46	IMP/S/GP/PLT	11	Tractor
5	5	IMP/S	16, 17	Tractor
6	11	ST/S/GP/PLT	16, 17	Tractor
7	19	ST/S/GP/PLT	16, 17	Winter Tractor
8	13	ST/S/GP/PLT	16	Tractor
9	151	IMP-SW/S/UB/PLT	10, 11	Winter Tractor
10	160	IMP-SW/S/UB/PLT	10, 11	Winter Tractor
11	102	IMP-SW/S/UB/PLT	11	Winter Tractor
12	119	IMP-SW/S/GP/PLT	15, 17	Tractor
13	22	ST/S/GP/PLT	15	Winter Tractor
14	40	ST/S/GP/PLT	15	Winter Tractor
14A	26	SW/S/GP	15	Tractor
15	22	IMP/S/GP/PLT	17	Winter Tractor
16	29	Irregular SW/S/GP/PLT	17	Tractor
17	68	IMP/GP	17	Winter Tractor
18	40	Irregular SW/GP/PLT	15, 16, 17	Tractor
18A	20	IMP/S/GP	16, 24	Tractor
19	32	IMP-SW/S/GP/PLT	11	Tractor
20	41	IMP-SW/S/GP/PLT	11	Tractor
21	76	IMP-SW/S/GP/PLT	11	Tractor

UNIT	ACRES	TREATMENT	MA	LOGGING SYSTEM
22	83	IMP/S/GP	17	Tractor
23	146	IMP/S/GP	15, 17	Tractor
24	40	IMP/S/GP	15	Winter Tractor
25	139	IMP/S/UB	15	Tractor
26	29	IMP/S/GP	17	Winter Tractor
27	45	IMP/S/GP	5, 17	Tractor
28	31	IMP/S/GP	17	Winter Tractor
29	54	IMP/S/GP	11, 16	Tractor
30	62	IMP/S/GP	11, 18	Tractor
31	698	IMP/S/UB	11, 12, 18, 24	Tractor
32	75	IMP/S/GP	12	Tractor
33	85	San-Salvage/GP	15, 17	Tractor
34	144	San-Salvage/GP	17	Tractor
36	41	ST/S/GP/PLT	15	Tractor
39	40	ST/S/GP/PLT	15	Tractor
40	156	ST/S/GP/PLT	15	Tractor
41	40	CCR/S/GP/PLT	15	Tractor
42	31	IMP/S/GP	11, 12	Tractor
43	26	IMP/S/GP	11, 12	Tractor
44	28	SW/S/GP/PLT	11	Tractor
45A	105	IMP-SW/S/GP/PLT	11, 12	Tractor/Skyline
45B	39	ST/S/UB/PLT	12	Tractor
46	37	ST/S/GP/PLT	12	Skyline
47	40	ST/S/GP/PLT	12	Tractor
49	64	IMP/S/GP	11, 12, 19	Tractor
51	7	ST/S/GP/PLT	12	Tractor
52A	24	ST/S/GP/PLT	12	Tractor
53	40	ST/S/GP/PLT	11, 12	Tractor
54	9	ST/S/GP/PLT	15	Tractor
55	40	IMP/S/UB	11, 18	Tractor
56	207	IMP/S/UB	11	Tractor/Skyline
59	39	ST/S/UB/PLT	15	Tractor
61	19	CCR/S/UB/PLT	15	Tractor
62	77	ST/S/UB/PLT	15	Tractor
62A	11	San-Salvage/GP	15	Tractor
62B	20	San-Salvage/GP	15	Tractor
64	8	ST/S/UB/PLT	15	Winter Tractor
64A	28	ST/S/UB/PLT	15	Tractor
64B	10	ST/S/UB/PLT	15	Tractor
68	25	CCR/S/GP/PLT	16	Skyline
69	16	ST/S/UB/PLT	16	Skyline
70	14	ST/S/UB/PLT	16	Tractor
70T	9	ST/S/GP/PLT	16	Winter Tractor
71	18	ST/S/GP/PLT	16	Tractor
72	12	ST/S/GP/PLT	16	Tractor
73T	31	ST/S/GP/PLT	16	Winter Tractor
75	36	SW/S/UB/PLT	15	Skyline
80	110	ST-SW/S/GP/PLT	15, 16	Winter Tractor
81	36	ST/S/GP/PLT	16	Winter Tractor
82	25	ST-SW/S/GP/PLT	16	Tractor
135	16	IMP/S/UB	16	Tractor
141	24	SW/S/UB/PLT	16	Skyline
142	9	ST/S/UB/PLT	16	Skyline
143A	18	SW/S/GP/PLT	16	Tractor

UNIT	ACRES	TREATMENT	MA	LOGGING SYSTEM
144S	22	ST/S/UB/PLT	15, 16	Skyline
144T	18	ST/S/UB/PLT	15, 16, 19	Tractor
147	93	ST/S/UB/PLT	15	Tractor/Skyline
148	77	ST/S/UB/PLT	11, 15	Skyline
149	65	ST/S/UB/PLT	15	Tractor/Skyline
150	103	ST/S/UB/PLT	15	Tractor/Skyline
151	40	ST/S/GP/PLT	15	Tractor
157	54	IMP/S/UB	11	Winter Tractor
158	143	IMP-SW/S/GP	10, 11	Winter Tractor
159A	18	ST/S/GP/PLT	15	Winter Tractor
170	97	SW/S/UB/PLT	15	Skyline
173	18	IMP/S/UB	5, 19	Skyline
174	29	IMP/S/UB	11	Skyline
176	15	IMP/S/UB	11	Skyline
179	76	IMP/S/GP	11	Tractor
182	50	IMP/S/UB	11	Tractor
183	68	IMP/S/GP	6, 16, 17	Winter Tractor
185	27	ST/S/GP/PLT	15	Tractor
185N	22	ST/S/GP/PLT	15	Tractor
188	40	ST/S/UB/PLT	15, 16	Skyline
190	43	IMP/S/GP	15, 17	Winter Tractor
190A	44	San-Salvage/S/GP	15, 17	Winter Tractor
192	40	IMP/S/UB	17	Skyline
193	17	SW/GP/PLT	11	Tractor
194S	36	IMP/S/UB	11, 18	Skyline
194T	31	IMP/S/GP	10, 11, 18	Winter Tractor
195	28	San-Salvage/S/GP	16	Tractor
196	14	IMP/S/GP	11	Winter Tractor
197	24	IMP/S/GP	11, 18	Tractor
203	59	IMP/S/GP	12	Tractor
205	34	IMP/S/GP	12, 19	Tractor
207	40	SW/S/GP/PLT	15, 16, 17	Tractor
208	40	ST/S/GP/PLT	15, 16, 17	Tractor
209	24	IMP/S/GP	15	Tractor
214	6	ST/S/GP/PLT	12	Tractor
219	38	ST/S/GP/PLT	12	Tractor
219A	26	CT/YT	12	Tractor
305	43	CT/YT	11	Tractor
306	57	CT/YT	11	Tractor
307	305	CT/YT	11	Tractor
311	9	CT/YT	11, 15	Tractor
317	63	CT/YT	15	Tractor
318	131	CT/YT	15	Tractor
319	17	CT/YT	15	Tractor
327	46	CT/YT	12	Tractor
328	31	CT/YT	12	Tractor
330	9	CT/YT	15	Tractor
331	16	CT/YT	15	Tractor
332	10	CT/YT	15	Tractor
333	14	CT/YT	15	Tractor
334	22	CT/YT	15	Tractor
335	20	CT/YT	15	Tractor
337	272	CT/YT	11, 12, 15	Tractor
339	89	CT/YT	15	Tractor

UNIT	ACRES	TREATMENT	MA	LOGGING SYSTEM
340	266	CT/YT	15, 16	Tractor
343	100	CT/YT	15	Tractor
344	73	CT/YT	15	Tractor
345	45	CT/YT	15	Tractor
346	11	CT/YT	15	Tractor
347	520	CT/YT	11, 12	Tractor
348	14	CT/YT	15	Tractor
349	21	CT/YT	12	Tractor
350	26	CT/YT	15	Tractor
362	192	CCR/S/GP/PLT	12	Tractor
363	40	CCR/S/GP/PLT	12	Tractor
364	33	CCR/S/UB/PLT	12	Tractor
365	25	CCR/S/UB/PLT	12	Tractor
366	6	CCR/S/UB/PLT	12	Tractor
367	38	CCR/S/UB/PLT	12	Tractor
367A	40	CCR/S/UB/PLT	12	Tractor
368A	10	CCR/S/GP/PLT	12	Tractor
368B	6	CCR/S/GP/PLT	12	Tractor
368C	7	CCR/S/GP/PLT	12	Tractor
369	40	CCR/S/GP/PLT	12	Tractor
TOTAL = 8,845acres				

Key: GS/IMP = Group Select/Improvement IMP = Improvement Cut ST = Seed Tree w/Reserves CC = Clearcut CCR = Clearcut w/Reserves SW = Shelterwood w/Reserves PLT = Plant S = Slashing UB = Underburning GP = Grapple Pile San-Salvage = Sanitation-Salvage

Regeneration Harvest Treatment is intended to replace a forest stand when modification treatments (i.e.: intermediate harvest) are not feasible due to poor quality trees for retention; stand is under stocked due past insect and disease mortality; or incorrect overstory species that would not meet management objectives. In this analysis area, regeneration is proposed in some stands to promote regeneration of seral, fire-tolerant species. Specifically, regeneration harvest is needed to restore western larch, ponderosa pine and western white pine. Within proposed harvest units, there would be both live and dead trees that are designated for reserve. The number of trees left and the associated stand structure is described by the varying regeneration harvest methods proposed. A description of these methods follows.

Seed Tree with Reserves initiates the establishment of a new stand with reserved overstory trees. An average of 8-10 trees per acre are being left for their seed-producing qualities, and structural attributes that are a part of the desired target stand or landscape. In this project, approximately 15% of the existing canopy cover would be designated to leave in a mix of large diameter ponderosa pine, western larch and Douglas-fir. These reserve trees would be left singly and/or in small groups. Interplanting (or a very wide spacing of 20 feet by 20 feet) of western white pine or ponderosa pine may be planted on some of the areas to ensure species diversity.

Shelterwood Seed Cut with Reserves has a similar purpose as a seed tree cut except that an average of 15-25 overstory trees per acre would be left to shelter the developing stand from the elements, and provide large tree structural attributes. Two units are proposed for this treatment. Interplanting of ponderosa pine will be planted on some of the areas to ensure reforestation of ponderosa pine.

Irregular Shelterwood/Seed Cut with Reserves is similar to a shelterwood except that the leave trees are left in an irregular pattern to manage for visual concerns.

Clearcut with Reserves also initiates establishment of a new stand. An average of 4 to 8 trees per acre would remain on site post treatment and their function would be as snags, cavity habitat, or replacement snags. Clearcuts are typically planted by hand, or may be reseeded by adjacent mature stands if desirable trees are present.

Intermediate Stand Treatments are being proposed to modify existing forest conditions in order to enhance growth, quality, vigor and composition of a forest stand and, in some cases, to reduce natural fuels. This treatment generally occurs prior to stand maturity and is not intended to promote regeneration of the stand. The following descriptions are examples of intermediate treatments proposed with this project. These treatments are designed to leave a stand that is sufficiently stocked to follow a desired development pattern until other treatments are considered appropriate.

Improvement Harvest is intended to produce a more resilient stand condition to MPB and represent a fire tolerant tree species and reduced ladder fuels. This type of harvest is being prescribed to improve the resiliency; composition and quality of specific forested areas by reducing the density of the trees to an average basal area of 60-80 square feet per acre and promoting a more open stand structure, similar to reference conditions for these stands (see the Forest Vegetation section in Chapter 3 for more information). Improvement harvest treatments are prescribed in stands with ponderosa pine that is overstocked and at high risk for infestation and losses from Mountain Pine Beetle (MPB). To accomplish these objectives, this treatment would focus on thinning the stands and removing excess and/or poor quality trees, mid-tolerant or intolerant tree explain species such as Douglas-fir and grand fir, and smaller diameter trees that are less tolerant of fire. In ponderosa pine stands, leaving the best quality tree and thinning at a specific spacing to create a desired distance between the boles of the trees make the stand less attractive to beetles. For example a stand with an average diameter of 16 inches would be thinned to a spacing of 30 feet by 30 feet. Improvement harvest prescription retains approximately 50-70% of the existing canopy cover and maintain trees functional snow interception in winter range, creating small canopy gaps for browse, and retaining forest conditions that support continuing options for future management. Open areas requiring regeneration of trees is not a specific objective of this harvest. Up to 15% of these harvest units may be in a seed tree or shelterwood condition after implementation due to current stand conditions.

Sanitation /Salvage are being prescribed to improve the long-term stand quality where this treatment is prescribed. A sanitation/ salvage harvest involves the elimination of trees that have been attacked or appear in imminent danger of attack by insect, dwarf mistletoe and/or fungi in order to prevent these pests from spreading to other trees. Following sanitation/salvage prescription treatments a manageable stand will remain in place. Five units have this treatment prescribed. This treatment specifically involves removal of overstory western larch that is heavily infested with dwarf mistletoe. Dwarf mistletoe in the overstory trees send out many seeds landing on and infecting the western larch sapling trees. This treatment reduces the infection rate of the western larch understory.

Commercial Thinning treatments are prescribed to reduce stand density (of trees) primarily to favor desired species and improve growth and improve forest health. Commercial thinning is prescribed in many stands with ponderosa pine that are at high risk for losses from Mountain Pine Beetle (MPB) as they are currently overstocked and at high risk for mortality. To accomplish these objectives, this treatment would focus on thinning the stands and removing excess and/or poor-quality trees, mid-tolerant or intolerant tree species such as Douglas-fir and grand fir, and smaller diameter trees that are less tolerant of fire. The intention of leaving the best quality tree and the needed spacing of those trees is to produce a more resilient stand condition that are less susceptible to MPB and represent a fire-tolerant tree species and reduced ladder fuels. These units would be whole tree yarded. The units that are shaded, in Table 2.2, would require winter logging so as not to exceed the 15% maximum detrimental soil disturbance.

Slash Treatment, Site Preparation and Hazardous Fuel Reduction: The following slash treatments and fuel reduction activities are prescribed in this project:

Slashing: Slashing involving cutting down unmerchantable trees that are not desirable due to overstocking, poor quality, undesirable species or size class. Slashing is a useful tool to eliminate ladder

fuels, reduce canopy fuels, and to favor desirable tree species. The intent of slashing is to reduce the potential for crown fire initiation and to help ensure the survivability of desirable overstory trees that would have otherwise be killed by prescribed fire or a wildfire. Slashing also occurs to create a fuel bed for broadcast burning.

Excavator (Grapple) Piling: Grapple piling facilitates fuel reduction while protecting remaining trees, where woody debris would be gathered and piled mechanically using an excavator. Spot excavator piling is prescribed in many treatment units, because only those portions of these units with heavier concentrations of fuel would be piled, rather than the entire unit. Large down woody debris would be retained on the site, to levels specified for each unit in the design features section of this chapter, to provide wildlife habitat and for soil nutrient recruitment. Piles are expected to be ignited in the late fall during periods of optimum smoke dispersal. The piles would be placed at least 25 feet away from the unit boundaries, leave trees, or leave islands to protect them from possible ignition. In narrow work areas, piles would be located as far from leave trees/islands as possible.

Prescribed Burning: Burning of natural and activity fuel includes broadcast burning, underburning and burning of excavator-piled material. Wildlife forage improvement and ecosystem maintenance burning is also prescribed. Specific prescribed fire treatments would be dependent on the amount of down woody material remaining after harvest and/or slashing is complete. Burning would only be completed when conditions described in the site-specific prescription and burn plan are met. Most prescribed burning occurs in the spring or fall under good smoke dispersion and when the risk of an escape is low.

Precommercial Thinning: The proposed action includes approximately 5,563 acres of precommercial thinning (PCT) in overstocked, sapling-size trees that have been initiated in the past 15 to 25 years. This treatment is intended to reduce tree density and improve the growing conditions of the remaining trees by reducing competition for light and nutrients. These treatments respond to the need to maintain the vigor and long-term productivity of forest stands. Thinning would also address ecosystem restoration objectives of restoring shade-intolerant species, restoring stand density to conditions consistent with historic disturbance regimes, favoring species that are most resistant to insect and disease infestation for specific site conditions, and generally improve stand health. Please refer to the precommercial thinning map (Map 15) in the map section of this document for locations of units.

Table 2.1 –Precommercial Thinning - Alternative 2

UNIT #	ACRES		UNIT #	ACRES		UNIT #	ACRES		UNIT #	ACRES		UNIT #	ACRES
1	30		50	55		98	48		146	1		193	31
2	15		51	11		99	30		147	43		194	23
3	31		52	18		100	24		148	27		195	44
4	2		53	16		101	46		149	5		196	38
5	3		54	11		102	4		150	8		197	49
6	20		55	5		103	19		151	39		198	19
7	29		56	32		104	31		152	24		199	21
8	21		57	73		105	11		153	30		200	9
9	19		58	27		106	9		154	14		201	51
10	21		59	63		108	15		155	18		202	63
11	29		60	74		109	18		156	7		203	47
12	11		61	7		110	12		157	62		204	26
13	24		62	3		111	30		158	13		205	41
14	15		63	3		112	24		159	81		206	32
15	14		64	12		113	4		160	1		207	22
16	15		65	9		114	45		161	15		208	11
17	22		66	8		115	14		162	6		209	109

UNIT #	ACRES	UNIT #	ACRES	UNIT #	ACRES	UNIT #	ACRES	UNIT #	ACRES
18	11	67	37	116	9	163	4	210	37
19	19	68	7	117	16	164	6	211	20
20	6	69	13	118	39	165	7	212	28
21	7	70	43	119	27	166	5	213	20
22	7	71	2	120	22	167	5	214	40
23	2	72	28	121	16	168	29	215	15
24	2	73	85	122	32	169	12	216	32
25	38	74	15	123	4	170	32	217	29
26	51	75	3	124	47	171	24	218	48
27	25	76	63	125	9	172	24	219	40
28	11	77	53	126	4	173	27	220	50
29	26	78	34	127	12	174	16	221	17
30	42	79	24	128	7	175	16	222	46
31	25	81	26	129	25	176	5	223	25
32	48	82	11	130	19	177	13	224	12
33	6	83	31	131	16	178	29	225	57
36	12	84	35	132	23	179	13	226	18
37	7	85	40	133	27	180	19	227	7
38	6	86	49	134	14	181	12	228	53
39	11	87	35	135	12	182	27	229	19
40	12	88	39	136	14	183	23	230	43
41	14	89	11	137	6	184	38	231	17
42	28	90	3	138	6	185	38	232	11
43	6	91	16	139	15	186	24	233	14
44	57	92	19	140	4	187	46	234	69
45	13	93	6	141	20	188	47	235	35
46	7	94	10	142	23	189	37	236	54
47	20	95	3	143	28	190	24	274	21
48	42	96	8	144	5	191	39	275	3
49	44	97	2	145	4	192	19	**TOTAL = 5,563 ac**	

White pine precommercial thinning and pruning (~ 212 acres) would be done on plantations that are in lynx habitat but have planted rust-resistant western white pine trees. White pine precommercial thinning or daylighting of white pine clears competing vegetation adjacent to planted rust-resistant western white pine trees at a fixed radius. Daylighting removes competing trees greater than 2 feet in height around desired trees within a 10-12 foot radius circle. Pruning removes the lower branches of western white pine trees. Branches infected by blister rust or near enough to the ground to be highly susceptible to infection are removed to prevent spread of the disease to the tree stem. Pruning is done to reduce the potential for mortality caused by blister rust. White pine precommercial thinning is intended to improve the chances of the white pine trees reaching maturity. By daylight thinning and pruning, the white pine would compete better with surrounding vegetation of the stand and maintain lynx habitat. Only 20% of each stand would be thinned in order to be in compliance with the Northern Rockies Lynx Management Direction (NRLMD).

Alternative 2 White Pine Daylight Thinning

UNIT NO	LYNX HABITAT	ACRES	UNIT NO	LYNX HABITAT	ACRES
237	Stand Initiation	21	256	Stand Initiation	11
238	Early Stand Initiation	8	257	Stand Initiation	28
239	Stem Exclusion	5	258	Stand Initiation	17
240	Early Stand Initiation	15	259	Stand Initiation	24
241	Stand Initiation	22	260	Stand Initiation	20
242	Stand Initiation	44	261	Stand Initiation	39
243	Early Stand Initiation	2	262	Stand Initiation	14
244	Stand Initiation	18	263	Stand Initiation	27

UNIT NO	LYNX HABITAT	ACRES		UNIT NO	LYNX HABITAT	ACRES
245	Stand Initiation	14		264	Stand Initiation	33
246	Stand Initiation	23		265	Stand Initiation	29
247	Stand Initiation	17		266	Stand Initiation	29
248	Stand Initiation	41		267	Early Stand Initiation	16
249	Stand Initiation	211		268	**Stand Initiation**	60
250	Stand Initiation	56		269	Stand Initiation	24
251	Stand Initiation	41		270	Stand Initiation	16
252	Stand Initiation	8		271	Stand Initiation	36
253	Stand Initiation	20		272	Stand Initiation	3
254	Early Stand Initiation	31		273	Stand Initiation	3
255	Stand Initiation	34		**TOTAL = 1,060 ACRES (20% = 212 ac)**		

Reforestation: Where regeneration harvest is proposed, planting would supplement the natural reforestion anticipated and restore tree species that are presently not sustainable due to inadequate seed source in the residual or adjacent stands. Planted conifer seedlings would assure timely reforestation and contribute towards long-term desired habitat conditions. Tree species to be planted include ponderosa pine, western larch and western white pine. These species have all declined in total area and stand dominance due to advancing succession and lack of natural fire. Approximately 3,348 acres will be planted to ensure reforestation of the desired species.

Fuel Treatments: The primary objective of these units is to reduce hazardous fuels by utilizing a combination of prescribed fire and/or mechanical treatments. Almost all of these units are immediately adjacent to private property. Prescribed burning could include underburning, jackpot burning, or pile burning. Mechanical treatments may include a combination of hand slashing, grapple piling, chipping or mastication.

Table 2.4 - Alternative 2 Proposed Fuel Treatment Units

UNIT	ACRES	TREATMENT[1]	MA		UNIT	ACRES	TREATMENT	MA
F1	174	MFT/Burn	10, 11, 12, 24		F12	11	MFT/Burn	11
F1A	17	Slash/Burn	11, 30		F13	24	Slash/Burn	15
F1OG	38	MFT/Burn	12		F13OG	5	MFT/Burn	13
F2	116	MFT/Burn	11, 16		F14OG	43	MFT/Burn	13
F3	17	MFT/Burn	11, 17		F15	9	MFT/Burn	17
F3OG	20	MFT/Burn	13		F15OG	13	MFT/Burn	13
F4	17	Slash/Burn	10		F16	73	Slash/Burn	11, 12
F8	52	MFT/Burn	10, 17		F18	568	Burn	2
F11OG	54	Slash/Burn	13		F45	125	Slash/Burn	11, 12
TOTAL = 1,378 acres								

MFT = Mechanical Fuel Treatments Slash = hand slashing without the potential for mechanical product removal.

Fuel and Wildlife Units: There are 33 burn units within the analysis area that have been identified as Fuels and Wildlife units. Approximately 10, 049 acres of burning and/or slashing may occur over the next ten years. The purpose of these treatments is to enhance wildlife habitat (e.g. bighorn sheep escape habitat and foraging) and ungulate browse in the analysis area and to reduce hazardous fuels. All the units are proposed to be burned and/or slashed. Due to budget constraints and limited burn windows the district estimates that slashing would occur on 100-500 acres per year and burning would occur on 500-2,000 acres per year. Overall acres could be reduced (by approx. 608 ac) if burning conditions are not favorable within the lynx analysis unit and burning would result in habitat reduction. Treatment units for which this reduction would occur are available in the project file. Table 2.5 displays the Fuels and Wildlife units with acres and treatment.

Table 2.5 – Alternative 2 Fuels and Wildlife Units

UNIT	ACRES	TREATMENT[1]		UNIT	ACRES	TREATMENT
FW501	281	Slash, Spring/Fall UB		FW544	576	Slash, Spring/Fall UB
FW502	159	Slash, Spring/Fall UB		FW545	429	Spring/Fall UB
FW503	215	Slash, Spring/Fall UB		FW577	147	Slash, Spring/Fall UB
FW509	32	Slash, Spring/Fall UB		FW589	335	Spring/Fall UB
FW511	34	Slash, Spring/Fall UB		FW5109	170	Slash, Spring/Fall UB
FW512	51	Slash, Spring/Fall UB		FW5111	46	Slash, Spring/Fall UB
FW516	39	Slash, Spring/Fall UB		FW5122	112	Spring/Fall UB
FW521	41	Slash, Spring/Fall UB		FW5125	14	Slash, Spring/Fall UB
FW522	642	Slash, Spring/Fall UB\		FW50601	294	Slash, Spring/Fall UB
FW524	484	Slash, Spring/Fall UB		FW50602	913	Slash, Spring/Fall UB
FW525	84	Slash, Spring/Fall UB		FW51101	575	Slash, Spring/Fall UB
FW533	214	Slash, Spring/Fall UB		FW51102	272	Slash, Spring/Fall UB
FW535	142	Slash, Spring/Fall UB		FW51103	743	Slash, Spring/Fall UB
FW536	307	Spring/Fall UB		FW53401	596	Slash, Spring/Fall UB
FW539	121	Slash, Spring/Fall UB		FW53402	581	Slash, Spring/Fall UB
FW540	538	Slash, Spring/Fall UB		FW53403	646	Spring/Fall UB
FW543	215	Slash, Spring/Fall UB		**TOTAL = 10,049 acres**		

UB = Underburn

Road System Management:

New Permanent Road Construction: Approximately 9 miles of new permanent road construction is proposed in this project. These new roads would access harvest and fuels units (Table 2.6). About 0.20 miles of the new road would be built on FS lands to allow the DNRC access to their lands. Table 2.6 displays the road numbers and corresponding mileages for the proposed new road construction plus the units that are accessed.

Table 2.6 – Alternative 2 Newly Constructed Permanent Roads

ROAD NUMBER	MILES	DRAINAGE	UNIT ACCESS
N1	0.30	Fivemile	4, 132, Dispersed Camp Site
N3	0.80	Canyon	29
N4	0.33	Warland	15
N5	0.46	Canyon	203
N6	0.87	Davis Mtn	62, 62A, 317, 318
N7 (6288)	0.80	Warland	13, 14, 14A, 159, F10
N8	1.31	Canyon	32, 205
N9	0.32	Dunn	45A, 45B
N11	0.17	Canyon	192
N12	0.25	Dunn	45A
N13	0.36	Dunn	45B, F45
N14	0.45	Warland	9, 158
N15	0.32	Warland	170
N16	0.24	Warland	10, 157
N18	0.03	Warland Reservoir	17
N19	0.19	Cripple Horse	36
N21	0.59	Davis	59, 317
N23	0.30	Warland	170
N39	0.20	Canyon	Cost-Share to Sec 36
N40	0.76	Upper Fivemile	150
N41	0.20	Summit Springs	
TOTAL = 9.25 miles			

Temporary Road Construction: Approximately 4 miles of temporary road construction is proposed to

access harvest units. These roads would be restored after timber harvest is completed. Table 2.7 displays the list of temporary roads, their length, the drainage they would be in and which units they access.

Table 2.7 – Alternative 2 Temporary Roads

ROAD #	MILES	DRAINAGE	UNIT ACCESS	ROAD #	MILES	DRAINAGE	UNIT ACCESS
T5	0.16	Warland Creek	17	T44	0.15	Upper Fivemile	150
T6	0.38	Cripple Horse Creek	22	T45	0.25	Warland Creek	49
T14	0.14	Davis Mtn	318	T53	0.37	Upper Fivemile	148
T25	0.59	Canyon Creek	31, 197	T54	0.23	Canyon Creek	344
T28	0.58	Canyon Creek	38, 345	T55	0.31	Canyon Creek	343
T37	0.12	Cripple Horse	340	T57	0.26	Canyon Creek	23
T42	0.20	Dunn Creek	362	T58	0.21	Cripple Horse	179
T43	0.31	Dunn Creek	362	**TOTAL = 4.26 miles**			

Road Reconstruction and BMP Implementation: This alternative would complete road repair and BMP implementation on approximately176 miles of haul route. Implementation of BMP work would include installing additional ditch relief culverts, replacing undersized or misaligned culverts where needed, installing surface water deflectors and drain dips to control surface water run-off, cleaning ditch lines and constructing ditches where needed, and grading road surfaces for drainage. This work would be done on all road systems that are needed for timber haul for the selected alternative. Additional BMP work on roads within the analysis area, not needed for the timber sale, has been identified and would be implemented as other funding becomes available.

Access Changes: Several roads that access dispersed camping areas along the Koocanusa Reservoir would be open yearlong which is a change from seasonal closures. Table 2.8 displays the roads that are proposed to change access.

Table 2.8 – Alternative 2 East Reservoir Road Access Changes

ROAD #	ROAD NAME	EXISTING STATUS	POST-PROJECT STATUS	MILES
4890	Canyon Creek Access	10 – Restricted seasonally to motor vehicles, Open to snow vehicles.	Open Yearlong	0.84
5296	Canyon Bay Dispersed East	10 - Restricted seasonally to motor vehicles, Open to snow vehicles.	Open Yearlong	0.17
5298	Canyon Bay Dispersed West	10 - Restricted seasonally to motor vehicles, Open to snow vehicles.	Open Yearlong	0.19
14519	Yarnell Access	10 - Restricted seasonally to motor vehicles, Open to snow vehicles.	Open Yearlong	0.59
TOTAL = 1.79 miles				

Access changes would occur on approximately 37 miles of trails for the purpose of wildlife security. Table 2.8A displays the trails that are proposed to change access from motorized to non- motorized.

Table 2.8A – Alternative 2 East Reservoir Trail Access Changes

TRAIL ID	LOCATION	EXISTING STATUS	POST-PROJECT STATUS	MILES
279	Warland Ridge	Motorized allowed	Non-Motorized Only	10.70
280	Warland Peak Lookout	Motorized allowed	Non-Motorized Only	2.30
281	Cripple Horse	Motorized allowed	Non-Motorized Only	6.22
420	Canyon Divide	Motorized allowed	Non-Motorized Only	9.83
426	Fivemile	Motorized allowed	Non-Motorized Only	1.82
500	Hornet Ridge	Motorized allowed	Non-Motorized Only	5.69
TOTAL = 36.56 miles				

Road Storage (Intermittent Stored Service)/Decommissioning: A Travel Analysis Process (TAP) was done for the analysis area. All roads within the analysis area were considered by district resources in terms of benefit, problems and risk. This report is in the Project File. Based on the TAP, it was determined that approximately 16 miles of road would be placed into intermittent stored service in order to maintain a safe and efficient transportation system, improve watershed conditions and enhance wildlife security. Storing roads that are not needed in the short- or long-term (10 to 20 years) allows the agency to focus limited road maintenance funds on those roads that are more important for land management and public access.

Roads that are not needed in the short-term (ten to 20 years), but would likely be needed at some time in the future would be stored. Storage may include surface ripping, seeding and/or cross ditching and may include some sections of partial road recontouring as needed on a site-specific basis, but the majority of the road prism would be retained. Road storage may also include culvert removal. The stored roads would not be drivable but trail prisms would be left (including recontoured areas) to allow non-motorized access. These trail prisms would not generally be added to the system nor be maintained as such and most would not be accessible after 10-15 years due to shrub reestablishment. Many of these roads are historic roads that are currently not accessible due to vegetation and blowdown. All the roads proposed for storage are currently restricted yearlong to motorized vehicles. This proposal would not change access. If the road is currently open to snow vehicles it would remain open to snow vehicles. Map 12 shows the location of the road changes.

The roads would be closed to traffic and left in a condition that there is little resource risk if maintenance is not performed. All but 0.38 miles of these roads are already restricted to public motorized access and those roads that are open to snow vehicles would remain open to snow vehicles.

Decommissioned roads are roads that not needed as part of the transportation system in the future or that have a high risk of impacting resources. Decommissioning of roads that are not needed in the long-term allows the agency to focus limited road maintenance funds on those roads that are more important for land management and public access. Approximately 6 miles of road is proposed to be decommissioned.

Table 2.9 displays the roads proposed for storage or decommissioning. The Alternative 2 proposed road change map shows the road locations (Map 12).

Table 2.9 – Alternative 2 East Reservoir Intermittent Stored Service and Decommissioning

ROAD #	ROAD NAME	EXISTING STATUS	POST-PROJECT STATUS	LENGTH (miles)
FIVEMILE CREEK				
4885C	Stenerson Mtn C	12 – Restricted Seasonally 12/1 – 6/30, including snow vehicles	Stored, undrivable	0.35
4885H	Stenerson Mtn H	12 – Restricted Seasonally 12/1 – 6/30, including snow vehicles	Stored, undrivable	0.49
4885I	Stenerson Mtn I	12 – Restricted Seasonally 12/1 – 6/30, including snow vehicles	Stored, undrivable	0.81
4885J	Stenerson Mtn J	05 – Restricted yearlong to all motorized vehicles	Stored, undrivable	0.12
4893A	Middle Fork Fivemile	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	1.95
4895	Lower Fivemile	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	2.29
5047	North Upper Fivemile	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	0.88
5050	Upper Fivemile Face	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	0.45
5049	Upper Fivemile View	Open yearlong	Decommissioned –	0.20

ROAD #	ROAD NAME	EXISTING STATUS	POST-PROJECT STATUS	LENGTH (miles)
			not driveable	
5050A	Upper Fivemile Face A	Open Yearlong	Decommissioned – not driveable	0.15
5050B	Upper Fivemile Face B	Open Yearlong	Decommissioned – not driveable	0.16
8843	South Fivemile	Private Access	Decommissioned – not driveable	0.01
WARLAND CREEK				
566	Warland Creek Fivemile	05 – Restricted Yearlong to all motorized vehicles	Stored, undrivable	2.03
4891D	Warland Basin D	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	1.85
5055	Upper Warland South	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	1.98
CRIPPLE HORSE CREEK				
4904G	Boundary Mtn G	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	1.95
5060	Summit Springs Unit	Open	Stored, Undrivable	0.27
5061	West Weigel Mtn III	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	0.28
5167	Cripple Horse Lake Creek	Open	Stored, undrivable	0.38
XX50	Summit Springs	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	0.30
4423B	Weigel Mtn B	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.13
4823C	Weigel Mtn C	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	1.22
4904K	Boundary Mtn K	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.11
4951	West Weigel Mtn	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.63
5062	West Weigel Mtn IV	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.16
5269	West Weigel Mtn II	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.13
CANYON CREEK				
4917	North Canyon	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	1.02
DUNN CREEK				
XX29	Hornet Ridge	05 – Restricted Yearlong to all motorized vehicles	Stored, undrivable	0.58
4923C	East Wyoma C	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.75
4923D	East Wyoma D	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.30
TOTAL STORED = 16.00 miles			**TOTAL DECOMMISSIONED = 5.93 miles**	

Undetermined Roads: Table 2.10 displays a list of existing, undetermined roads which occur in the East Reservoir analysis area. These roads would be added to the National Forest System of roads. A road maintenance objective would be completed to establish the objective and operational maintenance levels of each road.

Table 2.10 – Alternative 2 Undetermined Roads to National Forest Service Roads

ROAD NUMBER	MILES	DRAINAGE	REASON to ADD to NFS ROADS
4807B	0.67	Yarnell Cripple Horse	Access to Unit 190A
5047	0.88	Fivemile Creek	Access to Units 147, 150
5060	0.27	Cripple Horse Creek	Future Access
5167	0.38	Davis Mountain	Access to Units 59, 317
5216	0.69	Fivemile Creek	Access to Lake Koocanusa
5216A	0.34	Fivemile Creek	Access to Lake Koocanusa
5216B	0.21	Fivemile Creek	Access to Lake Koocanusa
5216C	0.24	Fivemile Creek	Access to Lake Koocanusa
5216D	0.06	Fivemile Creek	Access to Lake Koocanusa
5216E	0.18	Fivemile Creek	Access to Lake Koocanusa
5217	1.43	Fivemile Creek	Access to Lake Koocanusa
5262	0.13	Fivemile Unit	Future Access
5972 = XX1	0.51	Along Lake Koocanusa	Access to dispersed camping sites
5975 = XX15	0.69	Cripple Horse	Access to Marina
5976 = XX17	0.83	Along Lake Koocanusa	Access to dispersed camping sites
5978 = XX22	1.99	Canyon Creek	Powerline road, to be gated
5984 = XX14	0.35	Along Lake Koocanusa	Access to dispersed camping sites
5993 = XX2A	0.17	Along Lake Koocanusa	Access to dispersed camping sites
5994 = XX2	0.13	Along Lake Koocanusa	Access to dispersed camping sites
14534A	0.04	Warland Camping Area	Access to dispersed camping sites
XX20	0.77	Upper Fivemile	Access to units 147, 148, 311
XX29	0.58	Hornet Ridge	Future Access
XX37	0.25	Along Lake Koocanusa	Access to dispersed camping sites
XX38	0.20	Along Lake Koocanusa	Access to dispersed camping sites
XX39	0.35	Along Lake Koocanusa	Access to dispersed camping sites
XX50	0.30	Summit Springs	Access to Unit 335
XX52	0.86	Warland Creek	Access for Fisheries
TOTAL = 13.50 miles			

Table 2.10A displays a list of existing, undetermined roads which occur in the East Reservoir analysis area. These roads are not on the current transportation plan and are not needed. They are proposed to be decommissioned when funds become available. No maintenance would occur on these roads.

Table 2.10A – Alternative 2 Undetermined Roads to Decommissioned Roads

ROAD ID	MILES	DRAINAGE		ROAD NUMBER	MILES	DRAINAGE
XX5	0.19	Warland Creek		5058	0.22	Cripple Horse Creek
XX6	0.10	Warland Creek		5071	0.25	Dunn Creek
XX7	0.28	Warland Creek		5072	0.30	Dunn Creek
XX20	0.62	Upper Fivemile		5073	0.79	Dunn Creek
XX21	0.88	Cripple Horse Weigel		5110	0.90	Warland Creek
5047	0.93	N Upper Fivemile		5217A	0.20	Fivemile Creek
5047	0.29	N Upper Fivemile		5268	0.29	Cripple Horse Creek
TOTAL = 6.24 miles						

Proposed Cost Share Roads with DNRC: The Forest Service and the Montana State Department of Natural Resources and Conservation (DNRC) have proposed to cost-share in several roads in the analysis area. Table 2.11 displays the roads proposed for cost share and their mileages along with their locations.

Table 2.11 – Alternative 2 Cost Share Roads

ROAD ID	MILES	LOCATION	ACTIVITY	NEW CONSTRUCTION
7738	1.23	South Warland Creek - Sec 36	FS/CS on State Land	No
4907	0.34	Cripple Canyon – Sec 19	FS/CS on State Land	No
6724	0.32	Gopher Hill - Sec 14	FS/CS on State Land	No

7713 7713A	0.22 1.05	Gopher Hill Sec 14	FS/CS on State Land	No
566 7738 7738A	0.17 0.15 0.19	Warland Creek Sec 25 and 35	DNRC/CS on FS Land	No
7713	0.06	Gopher Hill - Sec 23	DNRC/CS on FS Land	No
6724	1.44	Gopher Hill - Sec 14	DNRC/CS on FS Land	No
4904 4912 4925 4907 4908 4908A	1.18 3.61 1.41 0.31 2.64 1.25	Cripple Canyon Sec 25, 26, 27, 59, 30, 19	DNRC/CS on FS Land	No
4913	3.30	Hornet Ridge - Section 31???	DNRC/CS on FS, PCTC	No
334 4953 4953A N39	7.30 0.56 0.89 0.20	South Canyon Creek	DNRC/CS on FS Land	Yes; N39
4925	1.90	Canyon Creek – Sec 14, 24	FS/CS on State Land	No

Recreation Proposal: The recreation proposal involves the dispersed recreation sites on the south side of the mouth of Fivemile Creek and at the Yarnell camping area.

Currently the Fivemile area receives relatively little dispersed camping use due primarily to poor access. Existing roads would be improved. New road construction (N1) to improve access would occur to provide more opportunities for dispersed campsites. Native rock ring fire pits, vault toilets and signage and other improvements would be provided.

The Yarnell area has been a very popular destination for dispersed camping. The site(s) are occupied primarily from Memorial Day through Labor Day and receives steady use. The road infrastructure is in place and the objective would be to improve the road without changing the character of the area.

U.S. ARMY- Corps of Engineers: In addition to the aforementioned activities, vegetation treatments within the analysis area, on lands owned by the US ARMY- Corps of Engineers at and near Libby Dam will be analyzed as part of the proposed action. The vegetation treatments include improvement harvest on approximately 261 acres and fuel treatments on approximately 160 acres (units with fuel treatments include a "F" in the unit name). The fuel treatments include thinning, slashing and/or burning or grapple piling (Map 14). The shaded units in Table 2.12 would require winter logging to stay below FS recommendation of 15% detrimental soil disturbance. The objective may be different for the COE. The COE would use the FS analysis for treatment on their land and produce their own decision document as per COE rules and regulations.

Table 2.12 – Alternative 2 U.S. ARMY- Corps of Engineers Libby Dam Units

UNIT	ACRES	TREATMENT	LOGGING SYSTEM		UNIT	ACRES	TREATMENT	LOGGING SYSTEM
COE1	41	IMP/UB	Tractor		COEF7	37	Slash/Burn	N/A
COE3	181	IMP/UB	Tractor		COEF8	25	Slash/Burn	N/A
COE4	22	IMP/UB	Tractor		COEF9	23	Slash/GP	N/A
COEF5	47	Slash/Burn	N/A		COEF10	12	Slash/Burn	N/A
COE5T	6	IMP/UB	Tractor		COEF11	8	Slash/Burn	N/A
COE6	11	IMP/UB	Tractor		COE12	8	Slash/Burn	N/A
TOTAL = 421 acres								

IMP – Improvement Harvest UB – Underburn GP – Grapple Pile

Forest Plan Amendments: Alternative 2 will require project-specific KNFP amendments including:

Project-Specific Amendment #1: Units #40 and 75 cannot meet MA 15 visuals direction because they are planned for regeneration treatments (seed tree & shelterwood) to exceed 40 acres either singularly or in combination with other units. (USDA Forest Service 1987a, III-64-65).

Alternative 2 will reduce tree canopy from fully stocked to a seed tree prescription in concert with exceeding 40 acre limitation as directed by NFMA. Management Area 15 VQO is maximum modification. Treatment of these units supports purpose and need statement #1.

***Project Specific Amendment #2*:** Unit #362 cannot meet MA 12 visuals direction because it is planned for regeneration treatment (clearcut) to exceed 40 acres. (USDA Forest Service 1987a, III-48-49).

Alternative 2 will reduce tree canopy from fully stocked to a clearcut prescription in concert with exceeding 40 acre limitation as directed by NFMA. Management Area 12 VQO is "maximum modification in areas of low visual significance, modification in areas of moderate visual significance, and partial retention in areas of high visual significance, unless infeasible when attempting to meet the goals of the Management Area." Treatment of this unit supports purpose and need statement #1.

***Project Specific Amendment #3*:** Units #73 and 188 cannot meet MA 16 visuals direction because they are planned for regeneration treatment (seed tree) to exceed 40 acres in combination. (USDA Forest Service 1987a, III-69-70).

Alternative 2 will reduce tree canopy from fully stocked to a seed tree prescription in concert with exceeding 40 acre limitation as directed by NFMA. Management Area 16 "minimum VQO is modification." Treatment of these units supports purpose and need statement #1.

***Project Specific Amendment #4*:** This alternative would require a project-specific KNFP amendment for harvest treatments in MA12 that removes hiding cover and movement corridors resulting in openings greater than 40 acres (Chapter 3, Wildlife Section for more information on hiding cover and openings). The KNFP standard for opening sizes in MA 12 is to maintain movement corridors of at least two site distances (400 feet) between openings, and generally not to exceed openings over 40 acres (KNFP p. III-49, Wildlife and Fish standards #7). Alternative 2 proposes one unit with acreage on MA12 land that result in openings that do not meet this standard. Unit 362 results in a 192 acre opening on MA12. Therefore, a site-specific KNFP amendment and Regional approval is necessary for this unit.

Alternative 2 would require Regional Forester approval for exceeding NFMA opening requirements and 36 CFR Part 219.27(d)(2) which states the maximum regeneration harvest treatment for Montana is 40 acres.

Past management within the analysis area has interspersed the forest with a series of 20-to-40 acre openings with very distinct (hard) edges between harvested and unharvested areas. This disturbance regime provides suitable habitat for species that are adapted to the edges between forested and non-forested areas. However, species that require larger blocks of habitat are at a disadvantage under such a disturbance regime. The analysis presented in the DEIS found the effects of larger openings would not result in adverse effects for big game, however treatments could result in openings that may not be fully utilized by elk as foraging areas, at least diurnally.

Table 2.13 - Alternative 2 Proposed Even-aged Harvest Openings Over 40 Acres

PROPOSED HARVEST UNIT	MA	TREATMENT ACRES	REGENERATION METHOD
62	15	77	ST with Reserves
147	15	93	ST with Reserves
148	15	77	ST with Reserves

PROPOSED HARVEST UNIT	MA	TREATMENT ACRES	REGENERATION METHOD
149	15	65	ST with Reserves
150	15	103	ST with Reserves
170	15	97	ST with Reserves
73T	16	31	ST with Reserves
75	15	36	SW with Reserves
188	15,16	40	ST with Reserves
80	15,16	110	SW/ST with Reserves
36	15	41	ST with Reserves
40	15	156	ST with Reserves
362	12	192	CC with Reserves
TOTAL = 1, 118 acres			

Table 2.14 displays features of Alternative 2.

Table 2.14 - Features of Alternative 2

TIMBER HARVEST TREATMENTS	ACRES
Intermediate Harvest	
Sanitation Salvage	332
Improvement	2,799
Commercial Thinning	2,256
Regeneration Harvest	
Seedtree with Reserves	1,507
Clearcut with Reserves	521
Shelterwood with Reserves	297
Seedtree/Shelterwood	135
Irregular Shelterwood	69
Improvement/Shelterwood	929
COE Lands	
Improvement Harvest/Prescribed Burn	261
Fuel Reduction with Grapple Piles	23
SLASH TREATMENT	**ACRES**
Grapple Pile/Burn Piles	3,952
Underburn with Timber Harvest	2,771
Prescribed Fire without Timber Harvest	1,378
Fuels and Wildlife Treatment	10,049
COE Lands	
Fuel Reduction with Prescribed Fire	137
ROAD CONSTRUCTION/RECONSTRUCTION	**MILES**
New Permanent Road Construction	9.25
Temporary Road Construction	4.26
Road Reconstruction and BMPs (haul routes)	176.40
ACCESS CHANGES	**MILES**
Trails: Motorized Use Changed to Non-motorized Use	36.56
Roads: Change in Access	1.79
Undetermined Roads Changed to NFS Road	13.50
Undetermined Roads to Decommissioned Roads	6.24
WATERSHED REHABILITATION	**MILES**
Miles of Road Put in to Long-Term Storage	16.00
Number of Stream Crossings Restored (estimate)	49
Stream Bank Stabilization	Yes
PLANTING	**ACRES**
Conifer Planting	3,346
OTHER ACTIVITIES	

Precommercial Thinning (acres)	5,563
White Pine Precommercial thinning (20% of stand acres)	212
Miles of Road Proposed for Cost-Share among the FS, DNRC	29.72

ALTERNATIVE 3

Alternative Design: Alternative 3 was designed to implement projects that meet the purpose and need for action as described in Chapter 1, and to meet all standards put forth in the KNFP and NFMA. Briefly these standards include opening size in MA 12 and 15, impacts to old growth forest stands and amount of motorized trails in project area changing to non-motorized. Such activities are listed under the issue identification section of this chapter on page 2.

Alternative Description: A listing of the changes in Alternative 3 from Alternative 2 follows.

- To meet NFMA requirements and KNFP recommendations for over 40 acre openings, all units were reduced to 40 acres or under.
- Treatments in old growth units were dropped as a KNFP amendment would have been needed.
- Unit 68 was dropped due to the presence of a red-tailed hawk nest.
- Units 36, 179 and 182 were dropped to meet the maximum protection measures for goshawk according to Reynolds et al. 1992 (refer to the goshawk analysis in Chapter 3 for more information).
- Unit F19 was added as fuels unit.
- Proposed commercial thinning for Alternative 3 is displayed in Table 2.17. Two units were dropped 311, 337 after additional field reconnaissance was done. The white bark pine thinning was dropped from this alternative so as not to implement the exception in the Northern Rockies Lynx management Direction and it also helps with the range of alternatives in this project.
- The units that are shaded, in Table 2.2, would require winter logging so as not to exceed the 15% maximum detrimental soil disturbance.
- Overall acres in the Fuels and Wildlife units could be reduced (by approx. 608 ac) if burning conditions are not favorable within the lynx analysis unit and burning would result in habitat reduction. Treatment units for which this reduction would occur are available in the project file.

A description of the silviculture treatments that are designed to move existing vegetation condition to desired condition are described previously under Alternative 2. Table 2.15 displays unit acres, silviculture treatment, management area and logging system involved in Alternative 3.

Table 2.15 – Alternative 3 Proposed Harvest Units

UNIT	ACRES	TREATMENT	MA	LOGGING SYSTEM
1	50	IMP/S/GP	11, 16	Winter Tractor
1A	11	SW/S/GP/PLT	11, 16	Winter Tractor
2	13	ST/S/UB/PLT	11, 16	Winter Tractor
2B	48	IMP/S/UB	11	Winter Tractor
2C	9	IMP/S/UB	11, 12, 24	Winter Tractor
2D	67	IMP/S/UB	11	Winter Tractor
3	27	ST/S/UB/PLT	11, 16	Winter Tractor
3A	26	IMP/S/UB	11	Winter Tractor
3B	37	IMP/S/UB	11	Skyline
3C	13	ST/S/UB/PLT	11	Tractor
4	46	IMP/S/GP	11	Tractor
5	5	IMP/S	16, 17	Tractor
6	11	ST/S/GP/PLT	16, 17	Tractor
7	19	ST/S/GP/PLT	16, 17	Winter Tractor
8	13	ST/S/GP/PLT	16	Tractor
9	151	IMP-SW/S/UB	10, 11	Winter Tractor

UNIT	ACRES	TREATMENT	MA	LOGGING SYSTEM
10	160	IMP-SW/S/UB	10, 11	Winter Tractor
11	102	IMP-SW/S/UB	11	Winter Tractor
12	119	IMP-SW/S/GP	15, 17	Tractor
13	22	ST/S/GP/PLT	15	Winter Tractor
14	40	ST/S/GP/PLT	15	Winter Tractor
14A	26	SW/S/GP	15	Tractor
15	22	IMP/S/GP	17	Winter Tractor
16	24	Irregular SW/S/GP	17	Tractor
17	68	IMP/S/UB	17	Winter Tractor
18	32	Irregular SW/GP	16, 24	Tractor
19	32	IMP-SW/S/GP	11	Tractor
20	41	IMP-SW/S/GP	11	Tractor
21	76	IMP-SW/S/GP	11	Tractor
22	83	IMP/S/GP	17	Tractor
23	146	IMP/S/GP	15, 17	Tractor
24	40	IMP/S/GP	15	Winter Tractor
25	139	IMP/S/UB	15	Tractor
26	29	IMP/S/GP	17	Winter Tractor
27	45	IMP/S/GP	5, 17	Tractor
28	31	IMP/S/GP	17	Winter Tractor
29	54	IMP/S/GP	11, 16	Tractor
30	62	IMP/S/GP	11, 18	Tractor
31	698	IMP/S/UB	11, 12, 18, 24	Tractor
32	75	IMP/S/GP	12	Tractor
33	85	San-Salvage/GP	15, 17	Tractor
34	144	San-Salvage/GP	17	Tractor
39	40	ST/S/UB/PLT	15	Tractor
40	40	ST/S/UB/PLT	15	Tractor
41	40	CCR/S/GP/PLT	15	Tractor
42	31	IMP/S/GP	11, 12	Tractor
43	26	IMP/S/GP	11, 12	Tractor
44	28	SW/S/GP/PLT	11	Tractor
45A	105	IMP-SW/S/UB	11, 12	Tractor/Skyline
45B	39	ST/S/UB/PLT	12	Tractor
46	37	ST/S/GP/PLT	12	Tractor
47	40	ST/GP/PLT	12	Tractor
49	64	IMP/S/UB	11, 12, 19	Tractor
51	7	ST/GP/PLT	12	Tractor
52A	24	ST/S/GP/PLT	12	Tractor
53	40	ST/S/UB/PLT	11, 12	Tractor
54	9	ST/S/UB/PLT	15	Tractor
55	40	IMP/S/UB	11, 18	Tractor
56	207	IMP/S/UB	11	Tractor/Skyline
59	39	ST/S/UB/PLT	15	Tractor
61	19	CCR/S/UB/PLT	15	Tractor
62	40	ST/S/UB/PLT	15	Tractor
64	8	ST/S/UB/PLT	15	Winter Tractor
64A	28	ST/S/UB/PLT	15	Tractor
64B	10	ST/S/UB/PLT	15	Tractor
69	16	ST/S/UB/PLT	16	Skyline
70	14	ST/S/UB/PLT	16	Tractor
71	18	ST/S/GP/PLT	16	Tractor
72	12	ST/S/GP/PLT	16	Tractor
73T	29	ST/S/GP/PLT	16	Winter Tractor

UNIT	ACRES	TREATMENT	MA	LOGGING SYSTEM
74T	40	SW/S/UB	15	Winter Tractor
80	40	ST-SW/S/GP/PLT	15, 16	Winter Tractor
81	36	ST/S/GP/PLT	16	Winter Tractor
82	25	ST-SW/S/GP/PLT	16	Tractor
135	16	IMP/S/UB	16	Tractor
142	9	ST/S/UB/PLT	16	Skyline
143A	9	ST/S/UB/PLT	16	Tractor
144S	22	ST/S/UB	15, 16	Skyline
144T	18	ST/S/UB	15, 16, 19	Tractor
147	40	ST/S/UB/PLT	15	Tractor/Skyline
148	40	ST/S/UB/PLT	15	Skyline
149	40	ST/S/UB/PLT	15	Tractor/Skyline
150	40	ST/S/UB/PLT	15	Tractor
151	40	ST/S/GP/PLT	15	Tractor
157	54	IMP/S/UB	11	Winter Tractor
158	143	IMP-SW/S/GP	10, 11	Winter Tractor
158A	33	IMP-SW/GP	10	Winter Tractor
159A	18	ST/S/UB/PLT	15	Winter Tractor
170	40	ST/S/UB/PLT	15	Tractor
173	18	IMP/S/UB	5, 19	Skyline
174	29	IMP/S/UB	11	Skyline
176	15	IMP/S/UB	11	Skyline
183	68	IMP/S/GP	6, 16, 17	Winter Tractor
185	27	ST/S/GP/PLT	15	Tractor
185N	22	ST/S/GP/PLT	15	Tractor
188S	10	ST/S/UB	16	Skyline
190	43	IMP/S/GP	15, 17	Winter Tractor
190A	44	San-Salvage/PCT/GP	15, 17	Winter Tractor
192	40	IMP/S/UB	17	Skyline
193	17	SW/GP/PLT	11	Tractor
194S	36	IMP/S/UB	11, 18	Skyline
194T	31	IMP/S/UB	10, 11, 18	Winter Tractor
195	28	San-Salvage/S/GP	16	Tractor
196	14	IMP/S/GP	11	Winter Tractor
197	24	IMP/S/GP	11, 18	Tractor
203	59	IMP/S/UB	12	Tractor
205	34	IMP/S/UB	12, 19	Tractor
207	40	SW/S/UB/PLT	15, 16, 17	Tractor
208	40	ST/S/UB/PLT	15, 16, 17	Tractor
209	24	IMP/S/GP	15	Tractor
214	6	ST/S/GP/PLT	12	Tractor
219	38	ST/S/GP/PLT	12	Tractor
219A	32	CT/YT	12	Tractor
305	43	CT/YT	11	Tractor
306	57	CT/YT	11	Tractor
307	305	CT/YT	11	Tractor
317	63	CT/YT	15	Tractor
318	131	CT/YT	15	Tractor
319	17	CT/YT	15	Tractor
327	46	CT/YT	12	Tractor
328	31	CT/YT	12	Tractor
330	9	CT/YT	15	Tractor
331	16	CT/YT	15	Tractor
332	10	CT/YT	15	Tractor

UNIT	ACRES	TREATMENT	MA	LOGGING SYSTEM
333	14	CT/YT	15	Tractor
334	22	CT/YT	15	Tractor
335	20	CT/YT	15	Tractor
339	89	CT/YT	15	Tractor
340	266	CT/YT	15, 16	Tractor
343	93	CT/YT	15	Tractor
344	64	CT/YT	15	Tractor
345	45	CT/YT	15	Tractor
346	11	CT/YT	15	Tractor
347	520	CT/YT	11, 12	Tractor
348	14	CT/YT	15	Tractor
349	21	CT/YT	12	Tractor
350	26	CT/YT	15	Tractor
220	35	CCR/UB/PLT	11, 12	Tractor
362A	40	CCR/GP/PLT	12	Tractor
362B	40	CCR/UB/PLT	12	Tractor
362C	39	CCR/UB/PLT	12	Tractor
363	40	CCR/UB/PLT	12	Tractor
364	33	CCR/UB/PLT	12	Tractor
365	25	CCR/UB/PLT	12	Tractor
366	6	CCR/UB/PLT	12	Tractor
367	38	CCR/UB/PLT	12	Tractor
367A	40	CCR/UB/PLT	12	Tractor
368	40	CCR/UB/PLT	12	Tractor
369	40	CCR/GP/PLT	12	Tractor
TOTAL = 7,782 acres				

Key: GS/IMP = Group Select/Improvement IMP = Improvement Cut ST = Seed Tree w/Reserves
CC = Clearcut CCR = Clearcut w/Reserves SW = Shelterwood w/Reserves
S = Slashing UB = Underburning PLT = Plant GP = Grapple Pile

Precommercial Thinning: Same as Alternative 2, see Table 2.1 The white bark pine thinning was dropped from this alternative so as not to implement the exception in the Northern Rockies Lynx management Direction and it also helps with the range of alternatives in this project (Map 16).

Reforestation: Where regeneration harvest is proposed, planting would supplement the natural regeneration anticipated and restore tree species that are presently not sustainable due to inadequate seed source in the residual or adjacent stands. Approximately 1,729 acres would be planted to ensure reforestation of the desired species.

Fuel Treatments: Alternative 3 proposes 13 fuels units in this alternative. Units F1OG, F3OG, F11OG, F13OG, F14OG and F15OG were dropped to meet KNFP objectives to not treat in old growth. Additional reconnaissance was done and Unit F19 was added.

Table 2.18 – Alternative 3 Proposed Fuel Treatment Units

UNIT	ACRES	TREATMENT	MA		UNIT	ACRES	TREATMENT	MA
F1	174	MFT/Burn	10, 11, 12, 24		F13	24	Slash/Burn	15
F1A	17	Slash/Burn	11		F15	9	MFT/Burn	17
F2	112	MFT/Burn	11, 16		F16	73	Slash/Burn	11, 12
F3	17	MFT/Burn	11, 17		F18	568	Burn	2
F4	17	Slash/Burn	10		F19	110	Slash/Burn	17
F8	52	MFT/Burn	10, 17		F45	125	Slash/Burn	11, 12
F12	11	MFT/Burn	11		**TOTAL = 1,309 acres**			

MFT = Mechanical Fuel Treatments Slash = Hand Slashing PPR – Potential Product Removal

Fuels and Wildlife Units: Alternative 3 Fuels and Wildlife unit proposal is the same as Alternative 2. Refer to Table 2.5 for information.

Road System Management:
New Permanent Road Construction: Approximately 7 miles of new permanent road construction is proposed in this alternative. Table 2.19A displays the newly constructed permanent roads.

Table 2.19A – Alternative 3 Newly Constructed Permanent Roads

ROAD NUMBER	MILES	DRAINAGE	UNIT ACCESS
N1	0.30	Fivemile	4, 132, Dispersed Camp Site
N3	0.80	Canyon	29
N4	0.33	Warland	15
N5	0.46	Canyon	203
N6	0.87	Davis Mtn	62, 62A, 317, 318
N7 (6288)	0.80	Warland	13, 14, 14A, 159, F10
N8	1.31	Canyon	32, 205
N9	0.32	Dunn	45A, 45B
N11	0.17	Canyon	192
N12	0.25	Dunn	45A
N13	0.36	Dunn	45B, F45
N14	0.45	Warland	9, 158
N15	0.32	Warland	170
N16	0.24	Warland	10, 157
N18	0.03	Warland Reservoir	17
N21	0.59	Davis	59, 317
N22	0.06	Canyon Creek Bay	Dispersed Camping Access
N39	0.20	Canyon	Cost-Share to Sec 36
N41	0.20	Summit Springs	Future Access
TOTAL = 8.06 miles			

Temporary Road Construction: Approximately 4 miles of temporary road construction is proposed to access harvest units under Alternative 3.These roads would be restored after timber harvest is completed. Table 2.20 displays the list of temporary roads, their length, the drainage they would be in and which units they access.

Table 2.20 – Alternative 3 Temporary Roads

ROAD #	MILES	DRAINAGE	UNIT ACCESS		ROAD #	MILES	DRAINAGE	UNIT ACCESS
T5	0.16	Warland Creek	17		T43	0.31	Dunn	362
T6	0.38	Cripple Horse	22		T44	0.15	Upper Fivemile	150
T14	0.14	Davis Mtn	318		T45	0.25	Warland	49
T25	0.59	Canyon Creek	31, 197		T53	0.37	Upper Fivemile	148
T28	0.58	Canyon Creek	38, 345		T54	0.23	Canyon	344
T37	0.12	Cripple Horse	340		T55	0.31	Canyon	343
T42	0.20	Dunn	362		T57	0.26	Canyon	23
TOTAL = 4.05 miles								

Road Reconstruction and BMP Implementation: This alternative would complete road repair and BMP implementation on approximately 140 miles of haul route as compared to approximately 170 miles under proposed Alternative 2. Implementation of BMP work would include installing additional ditch relief culverts, replacing undersized or misaligned culverts where needed, installing surface water deflectors and drain dips to control surface water run-off, cleaning ditch lines and constructing ditches where needed, and grading road surfaces for drainage. This work would be done on all road systems that are needed for timber

haul for the selected alternative. Additional BMP work on roads within the analysis area, not needed for the timber sale, has been identified and would be implemented as other funding becomes available.

Access Changes: Several roads that access dispersed camping areas along the Koocanusa Reservoir would be open yearlong which is a change from seasonal closures. In addition, a segment of NFS Road #4904 has been added in Alternative 3. This road in Boundary Mountain would give additional access to the trailhead for Trail #425. Table 2.20A displays the roads that are proposed to change access.

Table 2.20A - Alternative 3 East Reservoir Road Access Changes

ROAD #	ROAD NAME	EXISTING STATUS	POST-PROJECT STATUS	MILES
ROADS				
4890	Canyon Creek Access	10 – Restricted seasonally to motor vehicles, Open to snow vehicles.	Open Yearlong	0.84
4904	Boundary Mtn	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	04 - Restricted seasonally to motor vehicles 10/15 – 06/30, including snow vehicles.	3.70
5296	Canyon Bay Dispersed East	10 - Restricted seasonally to motor vehicles, Open to snow vehicles.	Open Yearlong	0.17
5298	Canyon Bay Dispersed West	10 - Restricted seasonally to motor vehicles, Open to snow vehicles.	Open Yearlong	0.04
14519	Yarnell Access	10 - Restricted seasonally to motor vehicles, Open to snow vehicles.	Open Yearlong	0.59

Access changes would occur on approximately 19 miles of motorized trails in Alternative 3 (Table 2.20B). Trail 281 and 420 would remain as motorized creating a loop which includes open NFS roads for recreationists to enjoy.

Table 2.20B - Alternative 3 East Reservoir Trail Access Changes

TRAIL ID	LOCATION	EXISTING STATUS	POST-PROJECT STATUS	MILES
279	Warland Ridge	Motorized allowed	Non-Motorized Only	10.70
280	Warland Peak Lookout	Motorized allowed	Non-Motorized Only	2.30
420	Canyon Divide	Motorized allowed	Non-Motorized Only	6.38
426	Fivemile	Motorized allowed	Non-Motorized Only	1.82
500	Hornet Ridge	Motorized allowed	Non-Motorized Only	5.69
TOTAL = 26.89 miles				

Road Storage (Intermittent Stored Service): Approximately 18 miles of road would be stored in order to maintain a safe and efficient transportation system, improve watershed conditions and enhance wildlife security. A section of NFS Road #4893A (1.04 miles) has been added to be stored in this alternative. Approximately 1.7 miles of seasonally restricted roads (4885C, 4885H, 4885I) are proposed to be stored. All other roads proposed for storage are currently restricted yearlong to all motorized vehicles. If roads are currently open to snow vehicles they would remain open to snow vehicles. Table 2.21 displays the roads proposed for storage. Map 13 displays Alternative 3 road changes.

Table 2.21 – Alternative 3 East Reservoir Intermittent Stored Service and Decommissioning

ROAD #	ROAD NAME	EXISTING STATUS	POST-PROJECT STATUS	LENGTH (miles)
FIVEMILE CREEK				
4885C	Stenerson Mtn C	12 – Restricted Seasonally 12/1 – 6/30, including snow vehicles	Stored, undrivable	0.35

ROAD #	ROAD NAME	EXISTING STATUS	POST-PROJECT STATUS	LENGTH (miles)
4885H	Stenerson Mtn H	12 – Restricted Seasonally 12/1 – 6/30, including snow vehicles	Stored, undrivable	0.49
4885I	Stenerson Mtn I	12 – Restricted Seasonally 12/1 – 6/30, including snow vehicles	Stored, undrivable	0.81
4885J	Stenerson Mtn J	05 – Restricted yearlong to all motorized vehicles	Stored, undrivable	0.12
4893A	Middle Fork Fivemile	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	1.96
4895	Lower Fivemile	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	2.29
5047	North Upper Fivemile	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	1.22
5050	Upper Fivemile Face	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	0.45
5216	Mouth of Fivemile	Undetermined - Open Yearlong	Stored, undrivable	0.69
5216A	Mouth of Fivemile	Undetermined - Open Yearlong	Stored, undrivable	0.34
5216B	Mouth of Fivemile	Undetermined - Open Yearlong	Stored, undrivable	0.21
5216C	Mouth of Fivemile	Undetermined - Open Yearlong	Stored, undrivable	0.24
5216D	Mouth of Fivemile	Undetermined - Open Yearlong	Stored, undrivable	0.06
5216E	Mouth of Fivemile	Undetermined - Open Yearlong	Stored, undrivable	0.18
5262	Fivemile Unit	05 – Restricted yearlong to all motorized vehicles	Stored, undrivable	0.13
5049	Upper Fivemile View	Open yearlong	Decommissioned – not driveable	0.20
5050A	Upper Fivemile Face A	Open Yearlong	Decommissioned – not driveable	0.15
5050B	Upper Fivemile Face B	Open Yearlong	Decommissioned – not driveable	0.16
8843	South Fivemile	Private Access	Decommissioned – not driveable	0.01
WARLAND CREEK				
566	Warland Creek Fivemile	05 – Restricted Yearlong to all motorized vehicles	Stored, undrivable	2.03
4891D	Warland Basin D	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	1.85
5055	Upper Warland South	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	1.98
CRIPPLE HORSE CREEK				
4904G	Boundary Mtn G	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	1.95
5060	Summit Springs Unit	Open	Stored, Undrivable	0.27
5061	West Weigel Mtn III	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	0.28
5167	Cripple Horse Lake Creek	Open	Stored, undrivable	0.38
XX50	Summit Springs	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	0.30
4423B	Weigel Mtn B	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.13
4823C	Weigel Mtn C	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	1.22
4904K	Boundary Mtn K	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.11
4951	West Weigel Mtn	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.63

ROAD #	ROAD NAME	EXISTING STATUS	POST-PROJECT STATUS	LENGTH (miles)
5062	West Weigel Mtn IV	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.16
5269	West Weigel Mtn II	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.13
CANYON CREEK				
4917	North Canyon	09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Stored, open to snow vehicles 12/1 – 4/30	1.02
DUNN CREEK				
4923C	East Wyoma C	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.75
4923D	East Wyoma D	09 - Restricted Yearlong, open to snow vehicles 12/1 – 4/30	Decommissioned – not driveable	0.30
TOTAL STORED = 17.62 miles			**TOTAL DECOMMISSIONED = 5.93 miles**	

Undetermined
Roads: Roads in the East Reservoir analysis area that would be changed from undetermined to National Forest System roads under proposed Alternative 3are the same as in Alternative 2. Refer to Table 2.10

Table 2.22 displays a list of existing, undetermined roads which occur in the East Reservoir analysis area. These roads are not needed and would be decommissioned when funds become available. Two roads were added to this alternative to protect cultural sites. No maintenance would occur on these roads.

Table 2.22 – Alternative 3 Undetermined Roads to Decommissioned Roads

ROAD ID	MILES	DRAINAGE		ROAD ID	MILES	DRAINAGE
XX5	0.19	Warland Creek		5298A	0.09	Canyon Bay
XX6	0.10	Warland Creek		5058	0.22	Cripple Horse Creek
XX7	0.28	Warland Creek		5071	0.25	Dunn Creek
XX20	0.62	Upper Fivemile		5072	0.30	Dunn Creek
XX21	0.88	Cripple Horse Weigel		5073	0.79	Dunn Creek
5047	0.93	N Upper Fivemile		5110	0.90	Warland Creek
5047	0.29	N Upper Fivemile		5217A	0.20	Fivemile Creek
5298	0.15	Canyon Bay		5268	0.29	Cripple Horse Creek
TOTAL = 6.48 miles						

Proposed Cost Share Roads with DNRC: This proposal is the same as in Alternative 2. Refer to Table 2.11 for more information.

Recreation Proposal: In addition to what is described under Recreation Proposal in Alternative 2, the cultural and recreation team members on the East Reservoir IDT have proposed a new non-motorized trail within the East Reservoir analysis area. The proposed trail is located in Sections 2 and 11 of T31N, R29W (Cripple Horse Creek) and would be a 2.75 mile loop. The proposed trail is positioned between Lake Koocanusa and Montana State Highway 37, south of the mouth Cripple Horse Creek.

The proposed trail would utilize historic railroad grades for a distance of 1.75 miles and requires new trail construction for approximately one mile. The proposed trail would be managed for non-motorized travel (horse, bicycle, foot) year long. The trail would occupy a 15 feet wide corridor with eight feet wide vegetation clearing and eight feet high overhang clearing. Within that corridor, a centerline treadway two foot wide would be cleared of rocks and sticks. Some hand earthwork would be necessary for tread construction where railroad grades are not being utilized (approx.1 mile). Biannual mowing of the treadway to a width of 60 inches would be performed. Where needed, Carsonite markers would be placed to direct traffic. Interpretive signs related to historic logging features would be placed along the trail.

A small marsh located at the southeast corner of the DSL inholding would be avoided during construction.

The trailhead would be constructed along the proposed cost-share road (N40) which accesses the DNRC inholding in Section 2. Trailhead parking area would accommodate four to six vehicles. This road would be gated at the east property line between DNRC and FS ownerships.

U.S. ARMY- Corps of Engineers (COE): Same as Alternative 2, refer to Table 2.12.

Forest Plan Amendments: This alternative has been designed so that no KNFP amendment(s) or Regional Forester approval would be needed.

Table 2.23 displays features of Alternative 3.

Table 2.23 - Features of Alternative 3

TIMBER HARVEST TREATMENTS	ACRES
Intermediate Harvest	
Improvement	2,696
Improvement/Shelterwood	962
Sanitation Salvage	301
Commercial Thinning	1,702
Regeneration Harvest	
Seedtree with Reserves	1,105
Clearcut with Reserves	475
Shelterwood with Reserves	162
Seedtree/Shelterwood	65
Irregular Shelterwood	56
COE Lands	
Improvement Harvest with Prescribed Fire	261
Fuel Reduction with Grapple Piles	23
SLASH TREATMENT	ACRES
Grapple Pile/Burn Piles	2,457
Underburn with Timber Harvest	3,390
Prescribed Fire without Timber Harvest	1,309
Fuels and Wildlife Treatment/Prescribed Fire	10,049
COE Lands	
Fuel Reduction with Prescribed Burn	137
ROAD CONSTRUCTION/RECONSTRUCTION	**MILES**
New Permanent Road Construction	7.23
Temporary Road Construction	3.91
Road Reconstruction and BMPs (haul routes)	167.85
ACCESS CHANGES	**MILES**
Trails: Motorized Use to Non-Motorized Use	26.89
Road Access Changes	5.34
Undetermined Roads to NFS Roads	13.37
Undetermined Roads to Decommissioned Roads	6.48
WATERSHED REHABILITATION	**MILES**
Miles of Road Put in to Long-Term Storage	20.19
Miles of Existing Road to be Decommissioned	5.93
Number of Stream Crossings Restored (estimate)	49
Stream Bank Stabilization	Yes
PLANTING	**ACRES**
Conifer Planting	1,729
OTHER ACTIVITIES	
Precommercial Thinning (acres)	5,687
Miles of Road proposed for Cost-Share among the FS, DNRC	30.29

MANAGEMENT MEASURES and DESIGN FEATURES

Table 2.34 describes the design features and management measures that would be applied to this project to protect resources in all action alternatives.

Table 2.34 – East Reservoir Project Management Measures & Design Features

Trails and Roads: Timber Sale Standard Provision B(T)6.22, Protection of Improvements, would be included in all timber sale contracts. It would require the purchaser to protect specified improvements, such as trails, roads and fences. Slash disposal adjacent to the Lake Koocanusa Scenic Byway (MSH 37) and Lake Koocanusa is critical to meeting KNFP VQOs.

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Soil: Refer to Appendix E for specific management requirements for the soil resource.

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Sensitive Plants: Legal and biological requirements for the conservation of endangered, threatened, proposed, candidate and sensitive plants would be met. These species have been identified in cooperation with other agencies such as the US Fish and Wildlife Service (FWS) and Montana Fish, Wildlife and Parks (FWP). Plant surveys would be completed prior to any ground-disturbing activities. Emphasis for surveys would be placed on areas with moderate-to-high potential to provide sensitive plant habitat. These surveys would be conducted by the District Botanist or a qualified biological technician. If any of these plant species are located prior to or during implementation of any management activities, the activity would be altered so that proper protection measures could be taken. Timber sale contract provision B(T)6.25, Protection of Habitat of Endangered Species, would be included in any subsequent timber sale contract. If necessary, additional modifications would occur through creation of special treatment zones or by relocating unit boundaries to avoid negative impacts. Disturbance to any sensitive plant populations observed during sale activity would be avoided through cooperation between sale administrators and sale purchaser. Surveys for PTES plants of in-stream work areas to improve pool quantity and quality would be completed before implementation.

- Retain all cottonwood, aspen and birch in all harvest units except in designated skid trails.
- Avoid burning and logging through the western pearl flower (*Heterocodon rariflorum)* population in Unit 16 by creating a special treatment zone.

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Noxious Weeds: Noxious weeds can have a large impact on not only rare plant habitat but any native plant habitat the following measures will be used to manage concerns for the spread of noxious weeds.

- **Winter Tractor Units to Avoid Noxious Weed Spread:** Winter tractor operations for Units 2B, 2C, 2D, 3A, 9, 10, 11, 17, 28, 157, 158, 158A, 190, 194T, 196, 305, 306, 307, COE1 and COE3.
- Certified weed-free forage is required for use on all national forest lands in Montana (36 CFR 261.50)
- Treat existing noxious weeds on roads to be reconstructed or stored prior to that activity, (if possible schedule spraying two or more seasons before activities are expected to occur to reduce the amount of viable weed seed stored in the soil).
- Treat existing noxious weeds in gravel/rock pits, inspect these sources for weeds and treat before material is transported.
- Survey and pre-treat existing noxious weeds on proposed trailhead construction site, and access sites for in-stream work.
- Require weed free certified straw for all construction, reconstruction, and restoration activities.
- Seed and fertilize stored roads with certified weed free seed immediately following restoration activities.
- Limit scarification objectives to the minimal required to meet reforestation objectives.
- Pressure-wash logging equipment, road maintenance and restoration equipment before entering the analysis area.
- Require timber sale purchaser to treat existing noxious weeds along haul routes the first operational season for weed spraying (spring or early summer)
- Seed newly constructed roads, trailheads, landings and major skid trails with certified weed-free seed.
- Prevent road maintenance machinery from blading or brushing through known populations of new invaders. In areas where weeds are established, (and activities are opening and blading restricted or
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closed roads with significantly lesser infestations); brush and blade road systems from un-infested segments of road systems to infested areas. Limit brushing and mowing to the minimum distance and height necessary to meet safety objectives in areas of heavy weed infestations

- Minimize soil disturbance and mineral soil exposure during activities. Soil disturbance should be no more than needed to meet project objectives. This includes not exceeding recommended mineral soil exposure for site preparation in regeneration harvest units; and utilizing timing and designated skid trails to minimize mineral soil exposure in harvest units.
- Survey proposed burn units for noxious weeds. Determine the risk of weed spread with prescribed fire. If there is a risk of spread beyond the road corridor, defer burning until the weeds can be treated or ensure post treatment funding for weed control.
- Survey proposed access for mechanized in stream for noxious weeds. Determine the risk of spread with the associated activity. If there is risk of spread, pre-treat the area before activity.
- Continue to monitor/survey the analysis area for new invader weed species. Monitor weed population levels in treated areas, with particular emphasis on haul routes, stored and decommissioned roads, and landings. Retreat as funding allows.
- Treat and sign sites if new invaders are located and defer ground disturbing activities within those sites until the weed specialist determines the site is no longer a threat, and approves those activities.
- Site-specific guidelines will be followed for weed treatments within or adjacent to known sensitive plant populations. All future treatment sites would be evaluated for sensitive plan habitat suitability; suitable habitats would be surveyed as necessary prior to treatment.
- All noxious weed control activities would comply with state and local laws and agency guidelines.
- As per the 2007 KNF Invasive Plant Management EIS and ROD, all herbicides used in the analysis area would be applied according to the labeled rates and recommendations to ensure the protection of surface water, ecological integrity and public health and safety. Herbicide selection will be based on target species on the site, site factors (such as soil types, distance to water, etc), and with the objective to minimize impacts to non-target species.
- Design road storage to allow passage of a 4-wheeler to continue treatment of hawkweeds and common tansy in the future. Hawkweed and common tansy populations will continue to expand even after the template has re-vegetated.
- Keep administrative traffic on closed roads to a minimum. Whenever possible, time activities prior to seed set of the primary weed species or emphasis weeds on a given road.
- Release bio-control agents on applicable sites, as they become available, and funding allows.
- Plan follow up noxious weed treatment the spring or early summer, following final purchaser blading of all haul roads if funds allow (this would be funded with appropriated or KV dollars).
- **Burning and Noxious Weed Spread:** A decision matrix will be developed to address weed concerns and to prioritize the units for burning based on desired objectives of the burning. This decision matrix will identify potential weed concerns and identify target habitat enhancement or fuel reduction objectives. This way weed control efforts can focus on particular species prior and post-burning.
- Design road storage to allow passage of a 4-wheeler to continue treatment of hawkweeds and common tansy in the future. Hawkweed and common tansy populations will continue to expand even after the template has re-vegetated.

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Burning and Noxious Weed Spread

A decision matrix will be developed to address weed concerns and to prioritize the units for burning based on desired objectives of the burning. This decision matrix will identify potential weed concerns and identify target habitat enhancement or fuel reduction objectives. This way weed control efforts can focus on particular species prior and post-burning.

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Pile Burning Emissions

The amount of smoke emissions, resulting from prescribed burning of natural and activity fuels would be mitigated by four general methods: fuel loading reduction, reduction in the amount of fuel consumed,

flaming combustion optimization, and impact avoidance.

Fuel Loading Reduction: The KNF has encouraged, through sale contract provisions, utilization of sub-merchantable material. Purchasers may be required to pay for, and therefore encouraged to utilize, top wood smaller than the normal utilization standard. These measures help decrease the amount of woody fuel, thus reducing the amount of smoke produced during burning.

Reduction in the Amount of Fuel Consumed: The reduction of the amount of fuel consumed by prescribed burning would be accomplished by burning under higher fuel moisture conditions as long as it still makes these fuels less available for consumption, thereby reducing the fuel consumed. Sometimes this can be part of the resource objective to retain coarse woody debris on the site.

Flaming Combustion Optimization: Methods that increasing the flaming combustion phase would be used when prescribed burning is determined to be the most appropriate fuel treatment. Concentration of logging slash by whole tree yarding or excavator piling increases the amount of material consumed during flaming combustion and also allows material to be burned in the late fall when the risk of escape is low. Purchasers are required to construct piles so they are compact and free of excess soil.

Impact Avoidance: Smoke impact avoidance would be accomplished through daily monitoring of airshed conditions. Burns will be coordinated with Montana/Idaho Smoke Monitoring Unit. This will help ensure smoke impacts are minimized and burning only occurs when dispersion is forecasted to be good and cumulative effects are not likely.

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Soil and Water:

1) Timber Sale Contract Provisions to be Included

CT6.3 - Plan of Operations, **BT6.4**, **CT6.4 -** Conduct of Logging, **BT6.42 -** Skidding and yarding, **BT6.422 -** Landings and Skid Trails, **BT6.6**, **CT6.6 -** Erosion Prevention Control, **BT6.64 -** Skid Trails and Fire Lines, **BT6.5** – Stream Course Protection, **CT6.62 -** Noxious Weed Control, **BT5.2**, **CT5.2 -** Specified Road Construction, **BT5.4**, **CT5.4 -** Road Maintenance, **CT6.603 -** Road Obliteration.

2) Best Management Practices (BMPs) - Implementation of the BMPs listed in Appendix C.

3) Riparian Habitat Conservation Areas (RHCAs)

Implementation of the KNFP RHCA widths for the units, shown in Appendix B, is required to meet KNFP standards as amended by INFS. Also if any additional streams are found during layout they will also be buffered to meet this requirement.

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Aquatic Species

Measures listed under soil and water, including implementation of BMPs and use of RHCAs as prescribed in INFS will protect fish.

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Winter Tractor Units to Avoid Over 15% and DSD for Alternatives 3:

Units: 2, 3, 7, 12, 13, 14, 15, 24, 26, 73T, 74T, 159A, 183, 190A, 305, 307, 311, 318, 319, 327, 328, 334, 335, 339, 340, 343, 344, 345, 346, 349, 350, COE4, COE5T, COE6, F1OG, and F2T1.

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Forest Vegetation:

In addition to the appropriate BMPs, riparian guidelines and standard contract clauses, the following management measures and monitoring would be included:

a. All harvest units would retain 7-30 tons per acre of downed woody material (or recruitment) greater than 3” in diameter to provide nutrient recycling and habitat for mammals and invertebrates. The volume and distribution of material may be subject to specific site conditions such as within the wildland urban interface. The tons retained by VRU are described previously in Table 3.11.

b. All harvest units will be designed to retain adequate levels of replacement snags to provide for cavity-associated wildlife species, genetic seed reservoirs, relic overstory, and long-term soil productivity. Replacement trees would be scattered throughout harvest units to the extent possible. A minimum of 8-

10 replacement snags per acre will be retained. Where **Non consistent with your description of a cc with 4-8 trees retained** possible within safety requirements, sound snags may be marked for retention. If they are felled for safety purposes, they will be retained on site. Silvicultural and burning prescriptions would be prepared with the goal of protecting large diameter relic trees, during site preparation and fuels treatment.

c. A marking review will be performed by a silviculturist on a minimum of 10% of proposed units to ensure marking guides are being implemented as per the prescription.
d. All tractor harvest units with an intermediate harvest prescription will have designated skid trails to facilitate removal of designated material while minimizing damage to less than 15% of the residual trees.
e. Harvest treatments will be designed to mimic natural process, and marking guides will emphasize working with existing stand structures, and will not result in a uniform or evenly spaced residual stand or an evenly spaced seed trees or relic trees.
f. If insect activity is present in the area, prescribed fire in dryland types may be postponed to a later date to give the residual trees time to recover.
g. Spring burns in the dryland types will be implemented before the ponderosa pine and bunchgrass are actively growing to minimize damage to native grasses.
h. Maintain old growth characteristics within old growth character stands (Green et al, 1992; USDA Forest Service, 1987a).

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Wildlife:

Minimize Disturbance to Raptors: If raptor-nesting territories are observed, avoid disturbance when possible, during the nesting/fledgling period (5/15-8/15). Include in sale contract if sites are known prior to selling. Consult with Wildlife Biologist on specific buffers and disturbance period dates. Utilize this criterion specifically on Unit 68 for Alternatives 2 and 4 - Pre-sale and harvest – all alternatives.

Protect Cripple Horse Goshawk Nest:

1. No management activities should occur within 0.5 miles of nest area (as mapped) between 3/1 and 8/30;
2. Route helicopter flights away from nest site and PFA as shown on territory maps (Project File).
3. Activities greater than ½ mile from the nest site should not occur until after July 15th or prior to April 1 (also see Criterion #2).

All criteria applicable to all alternatives for pre-sale, during and post-sale activities.

Maintain Cavity-Nesting Habitat: Where snag numbers are insufficient to meet snag levels by VRU (identified in the Snag Section at the 100% level) existing DF, WL and PP snags greater than 10" dbh and 10 feet in height would be marked and protected during timber harvest and site preparation as long as safety requirements are met. Merchantable trees (live or dead) would be reserved (Provisions CT2.3# and CT6.32#) C2.3# and C6.32# -- provisions were never intend for snags – intended for superior seed trees, research trees or high value wildlife trees (nest trees)). C6.32# - requires liquated damages ($) for damage. Not advisable to use if snag levels are still not met. If felled for safety, they would be left on site. Maintain the largest snags first. Favor trees further than one tree length from the road prism or any external boundary - Pre-sale and harvest – all alternatives.

Provide for Future Cavity-Nesting Habitat, Down Woody Habitat Recruitment, and Structural Diversity: KNF snag management protocol would be utilized to provide adequate snags for wildlife habitat. Units in MA 15 would be managed at the 40% level as prescribed in the KNFP. All other MAs would be managed at the 100% cavity habitat effectiveness level. Pre-sale – all alternatives.

Leave Tree Protection: Evenly distribute slash to protect leave trees. Pre-sale - all alternatives.

Maintain Winter Range Integrity: Restrict mechanized activities associated with logging and slashing off Roads 4885, 4886, 6271, 4916 (Dec. 1 – June 30); 6274, 4908A/B (Oct 15 – June 30); 4890, 5298 Sept 1 – May 30) to be consistent with the Road Closures as shown and applicable. Pre-sale, harvest and site prep – all alternatives. Winter logging would be required in Unit 1 in Alternative 2 and Units 1, 1A, 2B, 2C, 2D, 3A, 9, 10, 17, 28, 157, 158, 158A, 190, 194T, 169, COE1and COE3 for Alternatives 3 and 4.
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Provide for Wildlife Security: Determine the time of road restrictions involved with timber sales in the pre-sale roundtable discussion. Implement new road restrictions after timber harvest where applicable and maintain existing restrictions to the public during all operations. Pre-sale, Post-sale – all alternatives. This criterion could vary by MA (e.g. summer range versus winter range) and could be influenced by other management boundaries such as Bears Outside Recovery Zone (BORZ). Generally, roads entering into or within these management boundaries will not be open to the public while treatment activities are occurring.

Meet Standards and Guides of the Lynx Amendment for Management in Lynx Habitat: including use of prescribed fire. Prior to activity- Alternatives 3 and 4 as described in effects analysis, Chapter 3 of this document. If these are for alts, need to correct the PA.

Meet ESA Requirements: If critical habitat is identified during implementation of the proposed activities, special protection measures would be implemented by including provision CT6.251 in all applicable timber sale contract packages. This provision is mandatory. Contract prep and logging – all alternatives.

Maintain Minimum/All Associated Old Growth Characteristics within Old Growth Character Stands (Green Et Al, 1992; USDA Forest Service, 1987a): In the MA 13 portions of Units F1OG, F3OG, F11OG, F13OG, F14OG and F15OG no merchantable material would be removed. Outside MA 13 in these units, products (e.g. biomass) may be removed. Harvest Prescription, Sale Prep – Alternatives 2 and 4. Ensure burning is planned to minimize impact on the large old tree component and subsequent risk of insect infestation. May want to defer burning until MPB population has subsided.

Protect Specialized Wildlife Habitats: Protect currently unknown (not mapped) specialized habitats (e.g. wetlands, fens, bogs, elk wallows, nests, etc.) found during timber sale preparation activities with appropriate buffers. When new sites are found consult wildlife biologist, fish biologist or hydrologist for direction. Pre-sale and during activities – all alternatives.

Temporary Roads within the Tobacco BORZ: Portion of the East reservoir Analysis area will be returned to contour immediately following harvest and slash activities (units) or within one active bear year (4/1 to 11/30), unless unforeseen circumstances (e.g. weather) prevents completion of the treatment units accessed by these temporary roads. Temporary roads needed for another work season will be closed with the appropriate restriction device (i.e. rods, gate, earth barrier, etc.).

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Heritage Resources:

Heritage resource surveys were completed on all treatment units. The action alternatives were designed to protect known cultural sites, provide for protection of sites discovered during implementation, and protect treaty rights. These concerns would be addressed through ongoing consultation with tribal representatives. Appropriate Timber Sale Contract Provisions would be included in any timber sale contract. The appropriate provision specifies that the Forest Service may modify or cancel the contract to protect cultural resources, regardless of when they were identified.

Winter logging would be required for Unit 1 in Alternative 2 and Units 1 and 1A for Alternatives 3.

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Scenic Resource:

To meet visual quality objectives the following measures would be taken:
Units 2, 3, 6, 16, 18 – High level of slash disposal along Highway 37.
Units 7, 8, 59, 62, 80, 147, 148, 149, 150, 151 – 10 to 12 trees/acre leave trees in unit.
Units 41, 81 – Leave tree islands (1-2 acres) left in unit.
Units 6 - 10 to 15 trees/acre leave trees in unit.

U. S. Corp of Engineers Land: The following BMP must be employed within the boundary of recorded archaeological sites and/or in areas where additional archaeological identification work cannot be completed prior to project implementation.

A) Soil and duff moistures must be high enough to prevent thermal damage to artifacts that may be present in the lower duff layers or soil. Duff moistures of greater than 120% tend not to burn (Timmons, et al.

1996); consequently, the burn shall take place in the spring and/or late fall when conditions favor high duff moistures.

B) Any stumps within recorded archaeological sites that will be burned must be protected by wetting or foaming prior to ignition.

C) To keep excavation of soil to a minimum, control lines for prescribed burn operations must be located on existing roads, trails, topographical breaks, and any other natural barriers. Wet lines and/or foam lines are strongly recommended.

D) Slash piling, for the purpose of burning, will not occur within recorded archaeological sites. Many areas on COE fee owned land considered high probability: Slash piling, for the purpose of burning, shall be avoided where feasible.

E) Mechanical timber harvest must be done on frozen ground within recorded archaeological sites and high probability areas and in accordance he following stipulations.

1. Logging must be performed over frozen ground or over an accumulation of a minimum of one foot of compacted snow.

2. A rubber-tired skidder shall be used.

3. Logs will be limbed at the stump.

4. Dispersed skidding.

5. Logging landings shall be designated in areas outside of recorded archaeological sites and high probability areas. Landings will be clearly delineated by the COE archaeologist on the ground for the sale administrator and the contractor.

6. Slash piling will not occur within any recorded archaeological sites or high probability areas. Appropriate areas must be clearly delineated by the COE archaeologist on the ground for the sale administrator and the contractor.

RECOMMENDED MONITORING

a. Monitor marking and layout on a minimum of 10% of the units by silviculturist.

b. Monitor units following harvest to document existing condition, and recommend future stand treatment needs by silviculturist.

c. Monitor all regeneration units for reforestation success by silviculturist.

d. Monitor the effects of prescribed fire on vegetation within harvest units and prescribed fire outside harvest units on a minimum of 10% of the units to ensure objectives are met by fuels specialist.

e. OG treatment monitoring: pre- and post-treatment surveys. Are required for all old growth treatments

f. Noxious weed monitoring by weeds specialist to check effectiveness of treatment.

g. Cavity habitat monitoring on 10% of the units to ensure objectives for snag retention are met.

h. Road storage effectiveness to ensure

i. Soils monitoring to determine effectiveness of management measures and design criteria.

j. BMP monitoring by Interdisciplinary Team to check effectiveness of BMPs implemented.

k. Effectiveness of trail changes by recreation specialist, monitor use.

l. Monitor sensitive plant populations, check population near treatment units.

Refer to Appendix I, the East Reservoir Monitoring Plan for more information on how monitoring would be accomplished.

KV Projects

The list of KV projects is in order of priority for reforestation projects:

a. Site preparation as summarized in the alternative summaries.

b. Pre-plant and stocking surveys in regeneration units for stocking levels.

c. Planting for reforestation and restoration as summarized in Alternative summaries and detailed prescriptions for essential reforestation.

d. Planting for reforestation and restoration as summarized in Alternative summaries and detailed prescriptions for species restoration reforestation.

KV-Other Projects

The following is a list of KV-other projects other than reforestation projects::

a. Prescribed burning to reduce natural fuels and improve wildlife habitat and browse;
b. Removal of culvert on NFS Road #835A;
c. Road decommissioning, storage and culvert upgrades;
d. Fivemile fencing project (T32N, R27W, Section 14) on the creek bottom below private land, ½ mile of fence; Warland fencing project (T32N, R28W, Section 28) on the creek bottom, ½ mile of fence extending current riparian exclosure;
e. Warland Creek water development (T32N, R28W, Section 28) on the creek bottom, water tank and pipe with placement by contract equipment.
f. Leave Tree protection (i.e. duff clearing prior to prescribed burning)
g. Monitoring Leave Tree protection.
h. Old growth posting.
i. Monitoring old growth posting.
a. Aspen restoration fencing.
b. Noxious weed spraying.
c. Noxious weed monitoring.
j. Sensitive plant monitoring
k. Additional road maintenance within the project area.
m. Gate and berm maintenance within the project area.

COMPARISON OF ALTERNATIVES

This section displays a tabular comparison of the alternatives considered in detail. This information, along with a detailed discussion of the environmental consequences presented in Chapter 3, provides the basis for comparing alternatives.

Table 2.35 - Comparison of Alternative to Meet Purpose and Need Objectives

RE-ESTABLISH, RESTORE and RETAIN LANDSCAPES that are MORE RESISTANT and RESILIENT to DISTURBANCE (INSECT and DISEASE INFESTATIONS, FIRE) and UNCERTAIN ENVIRONMENTAL CONDITIONS such as CLIMATE CHANGE	ALT 1	ALT 2	ALT 3
Commercial Timber Harvest (acres)	0	8,845	7,782
Precommercial Thinning (acres)	0	5,563	5,563
White Pine Precommercial Thinning (20% of stand acres)	0	212	0
CREATE a HETEROGENEOUS LANDSCAPE that PROVIDES a VARIETY of HABITATS to SUSTAIN POPULATIONS of TERRESTRIAL and AQUATIC SPECIES			
Motorized Trails Changed to Non-Motorized (miles)	0	36.56	26.89
Fuels and Wildlife Treatment (acres)	0	10,049	10,049
PROVIDE AMENITIES, JOBS AND PRODUCTS TO THE COMMUNITIES			
Timber Harvest Volume, Estimated, CCF	0	78,761	7,782
Total Employment (persons)	0	629	560
REDUCE HAZARDOUS FUELS ADJACENT TO PRIVATE PROPERTY AND ACROSS THE LANDSCAPE WHILE RE-INTRODUCING FIRE TO THE ECOSYSTEM			
Natural Fuel Reduction/Stand IMP through Hand Slashing, Grapple Piling, Chipping, Mastication or Mechanical Product Removal (acres)	0	1,378	1,309
Fuels and Wildlife Treatment (acres)	0	10,049	10,049
ENHANCE RECREATION SETTINGS AND FACILITIES WITH THE GOAL OF PROVIDING HIGH QUALITY EXPERIENCES			
Construction and Improvement of Recreation Access Roads (miles)	0	6.28	6.28
Road Access Changed to Yearlong Access (miles)	0	1.79	1.79
Native Rock Ring Fire Pits, Vault Toilets and Signage Proposed	No	Yes	Yes

NE = No Effect NLAA = May affect, likely to adversely affect) (NLAA = may affect, not likely to adversely affect

Table 2.36 - Comparison of Issue Indicators by Alternative

ISSUE #1 – REGENERATION HARVESTS OVER 40 ACRES	ALT 1	ALT 2	ALT 3

Number of Units Over 40 acres in MA12	0	1	0
Number of Units Over 40 acres in MA 15, 16	0	12	0
ISSUE #2 - IMPACT to OLD GROWTH FOREST STANDS			
Vertical Structure Removed in Designated OG/ROG (acres)	25	137	0
Vertical Structure Removed in Undesignated OG (acres)	N/A	43	0
Road Length Existing/Built Adjacent/Through Designated OG/ROG (ft.)	158,400	+666	+666
Number of Existing or Proposed Regeneration Units Adjacent to OG	136	+28	+23
Edge Influence in OG (acres)	1,744	+250	+241
Interior Habitat Remaining in Old Growth (acres)	7,518	7,268	7,277
Treated to Maintain OG or Trend Stand Toward OG (Burning) (acres)	N/A	1,326	0
Percent of Designated Old Growth in the PSU	11.2	11.2	11.2
ISSUE #3 - MOTORIZED vs. NON-MOTORIZED TRAILS			
Motorized Trails Changed to Non-Motorized (miles)	0	36.56	26.89
Security Cover (Standard 30%)	28.1	35	33.4